MSFC-MAN-205
LINE ITEM NO. 12-H
DRD NO. LS-025A

TECHNICAL MANUAL
OPERATION AND MAINTENANCE

VOLUME II

SATURN V ELECTRICAL SUPPORT EQUIPMENT
TYPE 1 COUNT CLOCK

PART NO:

LCC 1371 COUNT RACK-40M08202
1372-DATA TRANSFER RACK-40M08203
1253-POWER SUPPLY RACK-40M08204
1254-REAL TIME RACK-40M08205
LUT 1255-DATA RECEIVER RACK-40M08206
1256-POWER SUPPLY RACK-40M08261

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TYPE I COUNT CLOCK

PART NO

LCC 1371-COUNT RACK-40M08202, 1372-DATA TRANSFER RACK-40M08203,
1253-POWER SUPPLY RACK-40M08204, 1254-REAL TIME RACK-40M08205,
LUT 1255-DATA RECEIVER RACK-40M08206 , 1256-POWER SUPPLY RACK-40M08261

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ECP 10-1103	Para. 1.4 and Figure 3-1	503 and Subs.	26-6-67
ECP 10-1050	Para. 3.12 and Figure 3-1	503 and Subs.	26-6-67
ECP 10-969	Para. 3.32.2 and Figure 3-40	503 and Subs.	26-6-67

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CHAPTER 6

DRAWINGS

This Chapter, bound separately for convenience, contains the logic diagrams, assembly drawings, unit schematics and wiring diagrams for the Count Clock System. They are arranged in drawing number order and are referenced by that number in the text, Chapters 1 through 5, Volume I.

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CHAPTER 1
GENERAL INFORMATION

1.1 INTRODUCTION.

1.1.1 The Count Clock System, Type I, is a 6-rack system composed of two separate clocks; a count time clock, and a real-time, or time-of-day, clock. These divisions are generally maintained in panel and rack grouping. Displays are presented for both real time and count time, and controls are furnished for presetting operations and output command time.

1.1.2 The count time clock, with a range of 100 days prelaunch to 100 days postlaunch and with an accuracy of ±1 second, presents the count time on readouts in seconds, tens of seconds, minutes, tens of minutes, hours, tens of hours, days, and tens of days. The count time status is also displayed on readouts with plus (+) for count-up, minus (-) for count-down, and an "H" for hold. The count time can be operated from internal sync signals (100-kc crystal-controlled oscillator) or external MILA sync signals.

1.1.3 The real time clock is synchronized with Eastern Standard Time (EST), receiving time signals in the form of IRIG code format B. Real time, with a range of 24 hours and an accuracy of ± 1 millisecond, is visually displayed in seconds, tens of seconds, minutes, tens of minutes, hours, and tens of hours.

1.1.4 The count time, real time (in gray code), and status information generated in the LCC are transmitted by the data transfer rack, via a PCM/FM data link, to the launch umbilical tower for display, readout, or generation of other command signals required at the LUT.

1.2 PHYSICAL DESCRIPTION.

1.2.1 The Count Clock System is mounted in six racks, four racks in the launch control center, and two racks in the launch umbilical tower. (See figure 1-1.) A remote count control panel mounted in the test supervisor console is also included as part of the system. The rack dimensions are 86-1/4 inches high, 21 inches wide, and 24 inches in depth. The rack nomenclatures are as follows:

LCC

1371 - Count Time Rack - 40M08202

1372 - Data Transfer Rack - 40M08203

1253 - Power Supply Rack - 40M08204

1254 - Real Time Rack - 40M08205

LUT

1255 - Data Receiver Rack - 40M08206

1256 - Power Supply Rack - 40M08261

1.2.2 The drawers and panels within each rack are numbered, starting at the bottom of the rack and progressing upward. For example, referring to figure 1-1, rack 1371, the bottom drawer is A1, the second drawer is A2, etc.; therefore, the bottom drawer is designated 1371A1, the second drawer is designated 1371A2, etc.

1.2.3 Module boards are identified by their location and position in each drawer. Each drawer is divided into three sections. Starting at the extreme left-hand side of the drawer, the section is designated A1, the center section is A2, and the right-hand section is A3. Module boards in each section are numbered from 1 through 19, starting from the front panel of the drawer. For example, to locate the tenth module board in section A1 of the second drawer of the 1371 rack, the designation would be 1371A2A1A10.

1.3 INPUT SIGNALS.

1.3.1 Input signals to the Count Clock System provide external control and synchronization of the Count Clock System with other systems at the launch complex. All signal inputs as well as the output data use the same logic. Positive logic functions are used throughout the system. Positive logic is defined as the logic 1 being positive with respect to logic 0 and is the controlling function for triggering or initiating circuit operations. A logic 1 is nominally 0 volt; a logic 0 is -8 vdc. All control signals are either a 0-volt level to initiate the circuit or a -8 volt level to inhibit the circuit. Input signals are as follows:

a. Atlantic Missile Range (AMR) or Merritt Island Launch Activity (MILA): A 100-pps synchronizing signal is used as a sync reference in the system. The signal is applied at pin C of 1254A1J14 and has an amplitude of -8 to 0 volts.

b. AMR or MILA, Eastern Standard Time (EST): A 100-pps, pulse-width-modulated time signal is decoded by means of pulse width detection, and used to generate the real time. The signal is applied at pin D of 1254A1J14 and has an amplitude of -8 to 0 volts.

c. AMR or MILA: A 2-kc signal is used to trigger the gray code counters in the real-time rack. The signal is applied at pin B of 1254A1J14 and has an amplitude of -8 to 0 volts.

d. AMR or MILA: A 1-pps signal is used as a timing signal for the electronic support equipment (ESE). The signal is applied at pin A of 1254A1J14 and has an amplitude of -8 to 0 volts.

e. Clock preset signals are used to preset the count generator. The signals are applied to the computer interface drawer from the RCA computer.

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f. Cutoff: Cutoff causes the count time portion of the count clock to hold at engine cutoff. The signal originates from ESE and is applied at pin W of 1371A3J1.

Fig. 1-1	Rack	Unit	Name	Function
11	1372	1372A3	VCO & Line Driver (40M08305)	The VCO and line driver drawer contains the voltage-control oscillator which is modulated by the count time and real time pulse train for transmission to the LUT.
12	1372	1372A4	Data Link Encoder (40M08285)	The DLE drawer contains the logic to generate the sync word, address, status, and convert parallel inputs of count time and real time to serial pulse train data for modulation of the VCO in the line driver.
13	1372	1372A5	Clock Monitor (40M0821)	The clock monitor panel displays the BCD count time, BCD real time, and the real time gray code. The drawer also contains the 100-kc oscillator which provides the basic pulses for CCS operation.
14	1372	1372A6	Encoder Transmitter (40M55160)	Note: The encoder transmitter panel converts count time and status information received in parallel form from the count clock count time section to serial PCM code, and transmits this information to MSFC.
15	1372	--	--	Blank panel.
16	1372	--	--	Blank panel.
17	1253	1253A1	--	Air filter.
18	1253	1253A2	28 vdc Power Supply (40M00206)	The power supply provides the +28 vdc in the LCC for the logic circuits and readout indicators.
19	1253	--	--	Blank panel.
20	1253	1253A3	Patch Panel (40M00600)	The patch panel interconnects signals and voltages between racks and to the individual drawers within the rack.
21	1253	1253A4	Power Filter (40M08216)	The power filter drawer provides filtering of the +28 vdc power supply, and isolation for the 115-vac input.
22	1253	1253A5	-16.5 & +12 VDC Power Supply (40M08214)	The power supply provides -16.5 vdc and +12 vdc for the logic circuits.
23	1253	1253A6	-8.5 and -6.5 VDC Power Supply (40M08213)	The power supply provides a -8.5 vdc and -6.5 vdc for the logic circuits.

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Fig. 1-1	Rack	Unit	Name	Function
24	1253	1253A7	Readout Driver (40M06982)	The readout driver drawer provides count time readouts identical to those of the decoder and readout drawer. In addition, it provides information to readout drivers in the public information facility and to other external readouts.
25	1254	1254A1	Patch Panel (40M00600)	The patch panel interconnects signals and voltages between racks and to the individual drawers within the racks.
26	1254	1254A2	Binary Counter Gray Code Converter (40M08220)	The binary counter/gray code converter accepts a decimal code from the real time sync, converts it to straight binary, updates it, and converts it to gray code for display and transmission purposes.
27	1254	1254A3	Real Time Distributor (40M08218)	The real time distributor is an interconnecting panel for patching the real time signals to their proper destinations.
28	1254	1254A4	Real Time Sync (40M08219)	The real time sync drawer receives Eastern Standard Time in the form of IRIG format B, pulse-width detects logic 1's and logic 0's, and sends a real time binary decimal code to the monitor panel and a real time 7-bar decimal code to the real time display panel and the real time events drawer.
29	1254	1254A5	Real Time Event (40M08217)	The real time event drawer receives the real time, and displays it in the form of a 7-bar readout. The real time displayed at lift-off is held until manually reset.
30	1254	1254A6	Real Time Display (40M08279)	The real time display panel provides a 7-bar readout of real time.
31	1254	1254A7	-16.5 & +12 VDC Power Supply (40M08214)	The power supply provides -16.5 vdc and +12 vdc for the logic circuits in the real time rack.
32	1254	--	--	Blank panel.
33	1254	--	--	Blank panel.

Fig. 1-1	Rack	Unit	Name	Function	
34	1255	1255A1	Patch Panel (40M00600)	The patch panel interconnects signals and voltages between racks and to the individual drawers within the rack.	
35	1255	1255A2	Computer Interface (40M08208)	The computer interface drawer is identical to unit 1371A4.	
36	1255	1255A3	Data Link Decoder (40M08299)	The data link decoder drawer receives the reconstituted PCM pulse train and the 50-kc timing pulses from the synchronizer drawer. The PCM data pulse train (containing sync word, count time, and real time address, 1-pps controlled status, count time and real time data in serial form) is decoded to parallel format. The decoded data are gated and conditioned for driving external display equipments and integration racks, and are interfaced to the RCA computer. Gray code updated to 1-millisecond accuracy, 1-kc square wave, 1-pps controlled, and 1-pps uncontrolled signals are generated in the data link decoder.	
37	1255	1255A4	PCM Bit Synchronizer	The synchronizer drawer provides 50-kc signals for synchronizing the data pulse train to enhance proper decoding of the real time, count time, and status from the LCC.	503 & SUBS.
38	1255	1255A5	Line Receiver (40M08321)	The line receiver drawer receives the transmitted PCM/FM signal from the LCC via the two-wire shielded transmission line, amplifies and demodulates this signal, and feeds the PCM pulse train through the synchronizer to the data link decoder.	
39	1255	1255A6	Decoder & Readout (40M07010)	The decoder and readout drawer is identical to Unit 1371A7.	
40	1255	1255A7	Timed Output Command (40M07013)	The timed output command drawer is identical to Unit 1371A5.	
41	1255	1255A8	Auxiliary Function (40M55237)	Note: The auxiliary function drawer provides status information at a 28-volt level to the MLR through ESE integration.	503 & SUBS.

	Fig. 1-1	Rack	Unit	Name	Function
503 & SUBS	42	1256	1256A1	Vent (40M00417)	Air filter.
	43	1256	1256A2	+28 VDC Power Supply (40M00206)	Same as 1253A2.
	44	1256	--	--	Blank panel.
	45	1256	1256A3	Patch Panel (40M00600)	Same as 1253A3.
	46	1256	1256A4	Power Filter (40M08216)	Same as 1253A4.
	47	1256	1256A5	-16.5 and +12 VDC Power Supply (40M08214)	Same as 1253A5.
	48	1256	1256A6	-8.5 and -6.5 VDC Power Supply (40M08213)	Same as 1253A6.
	49	1256	1256A7	Readout Driver (40M06982)	Same as 1253A7.
	--	--	--	Count Control Panel (40M07082)	The count control panel provides the switches and controls necessary for remote control of the CCS.

Table 2-5. Real Time Event (40M08217)

Fig. & Key	Control or Indicator	Ref. Desig.	Function
2-5 1	LIFT OFF TEST switch (pushbutton)	S-2	When depressed, it tests lift-off circuits, holding real time event display in the last count at time of test.
2-6 2	RESET switch (pushbutton)	S-1	When depressed, it enables real time event display to reset to current real-time and start updating.
2-6 1	Readout display	- -	A 7-bar digital display of real time in hours, minutes, and seconds.

Table 2-6. VCO and Line Driver (40M08305)

Fig. & Key	Control or Indicator	Ref. Desig.	Function
2-7 2	POWER ON/OFF switch	S-1	Applies -16.5 vdc and +28 vdc to VCO and line driver and 115 vac to -28 vdc power supply.
2-7 1	POWER ON (green indicator light)	DS-1	When illuminated, it indicates power is applied to VCO and line driver.

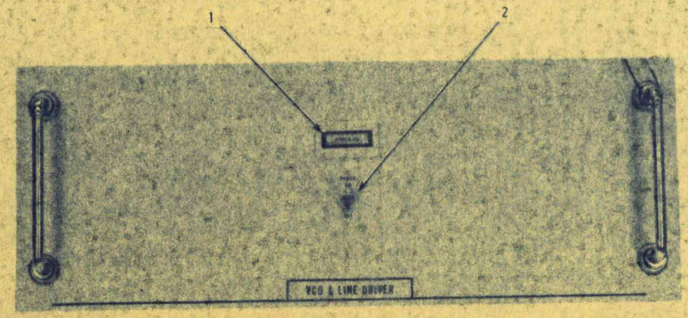

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Figure 2-7. VCO and Line Driver Drawer (40M08305)

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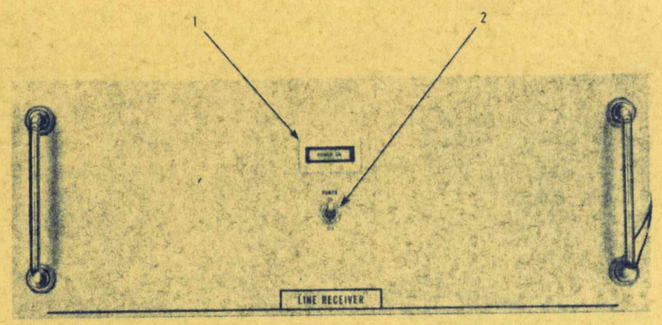

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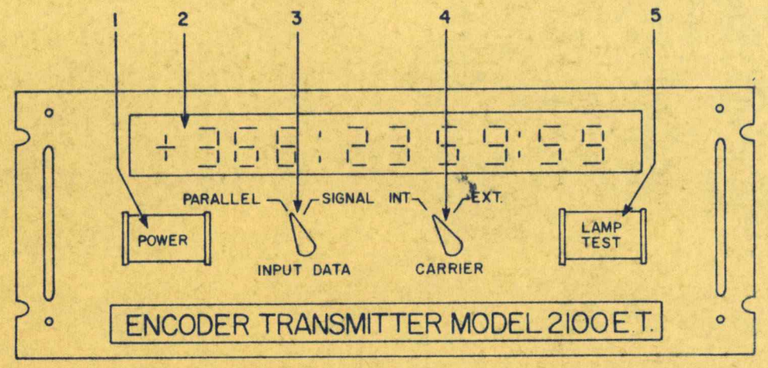
Figure 2-8. Line Receiver Drawer (40M08321)


1
2
3
4
5
+366:23 59:59
PARALLEL
SIGNAL
INT
EXT.
POWER
INPUT DATA
CARRIER
LAMP TEST
ENCODER TRANSMITTER MODEL 2100 E.T.

503 & SUBS.

503
&
SUBS.

Table 2-9A Encoder Transmitter

Fig. & Key	Controller Indicator	Ref. Desig.	Function
2-9A 1	POWER switch	S1	Applies 117-volts AC to encoder transmitter.
2	Indicator lamps		Indicator count time and status.
3	INPUT DATA switch	S3	Selects external or internal carrier frequencies.
4	CARRIER switch	S4	Applies external serial data to time base and signal output A1 when placed to EXT, or applies internal serial data to pulse width modulator A3 when placed to INT.
5	LAMP TEST switch	S2	Illuminates all display lamps driven from this unit when depressed.

SECTION II

OPERATING INSTRUCTIONS

2.3 OPERATING INSTRUCTIONS.

2.3.1 This section contains a step-by-step tabulated procedure for turn-on, operation, and turn-off of the Count Clock System.

2.3.2 The tabulated data identify the controls, their location, and their functional positions.

2.4 POSITION OF CONTROLS.

2.4.1 The initial position of the controls prior to application of power is shown in Table 2-9.

Table 2-9. Position of Controls Prior to Application of Power

Location	Control	Control Setting	Reference		
			Figure	Key	
1371A6	OSCILLATOR ON/OFF switch	OFF	2-1	11	
1371A6	LOCAL/REMOTE switch	LOCAL	2-1	12	
1372A3	POWER ON/OFF switch	OFF	2-7	2	
1372A5	POWER ON/OFF switch	OFF	2-3	4	
1372A5	DDAS PLAYBACK/NORMAL switch	NORMAL	2-3	6	
1253A4	Circuit breaker ON/OFF switch	OFF	--	--	
1256A4	Circuit breaker ON/OFF switch	OFF	--	--	
1255A5	Power ON/OFF switch	OFF	2-8	2	
1255A4	Power ON switch	Off	2-9	1	
1372A6	POWER switch	OFF	2-9A	1	503 & SUBS.
1372A6	INPUT DATA switch	PARALLEL	2-9A	3	
1372A6	CARRIER switch	INT	2-9A	4	

2.5 SYSTEM TURN-ON PROCEDURE.

2.5.1 The necessary steps required to place the Count Clock System to an initial power-on condition are listed in table 2-10.

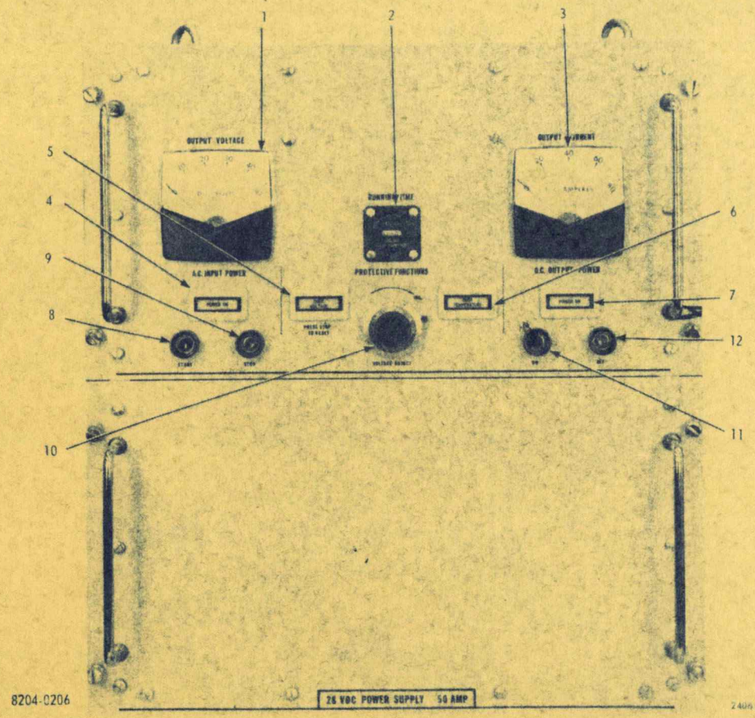


Figure 2-10. 28-VDC Power Supply

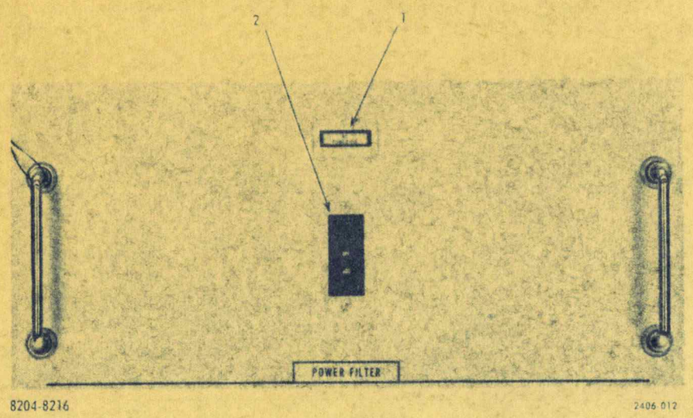


Figure 2-11. Power Filter (40M08216)

Table 2-10. Position of Controls for Power-ON Condition (Cont.)

Location	Control	Control Settings	Remarks	Reference	
				Fig.	Key
1372A5	POWER ON/OFF switch (4, fig. 2-3)	ON	a. Illuminates front panel readout lights.	2-3	1,2, 3
1371A6	OSCILLATOR ON/ OFF switch (11, fig. 2-1).	OSCILLATOR ON	a. Illuminates OSCIL-LATOR ON indica-tor.	2-1	1
1372A3	POWER ON/OFF switch (2, fig. 2-7)	ON	a. Illuminates POWER ON indicator.	2-7	1
1256A2	START pushbutton (8, fig. 2-10)	Push and hold until output voltage meter indicates 28 volts (less than 5 sec-onds).	a. OVER TEMPERA-TURE indicator extinguishes.	2-10	6
			b. Illuminates POWER ON indicator.	2-10	4
			c. Applies power to +28 vdc supply.	2-10	1
1256A2	VOLTAGE ADJUST (10, fig. 2-10)	Adjust	a. Set to +28 vdc on voltmeter.	2-10	1
1256A2	OUTPUT POWER ON pushbutton (11, fig. 2-10)	Push	a. Illuminates the POWER ON indi-cator.	2-10	7
			b. Observe that output current is less than 50 amperes on the ammeter.	2-10	3
1256A4	ON/OFF circuit breaker (2, fig. 2-11)	ON	a. Illuminates the AC and DC POWER ON indicators on 1256A5 and 1256A6.	2-12 and 2-13	2,5, 7,8
			b. Illuminates AC POWER ON indi-cator on 1256A4.	2-11	1

Table 2-10. Position of Controls for Power - ON Condition (Cont.)

Location	Control	Control Settings	Remarks	Reference Fig.	Reference Key
			c. Observe that the voltmeter and ammeter indications are as shown in table 2-12.		
1255A5	POWER ON/OFF switch (2, fig. 2-8)	ON	a. Illuminates POWER ON indicator.	2-8	1
1255A4	Power ON switch (1, fig. 2-9)	ON	a. Illuminates power ON indicator.	2-9	1
1372A6	POWER switch	ON		2-9A	1
1372A6	INPUT DATA switch	PARALLEL	a. Parallel data available from 25.	2-9A	3
			b. Serial data available from 24.		
503 & SUBS. 1372A6	CARRIER switch	INT	a. Normally available carrier frequencies are: 1 KC, 1.3 KC, 1.7 KC and 2.3 KC.		

2.5.2 Tables 2-11 and 2-12 indicate the maximum voltmeter and ammeter indications of the Count Clock System under normal conditions.

Table 2-11. Normal Voltmeter and Ammeter Indications (LCC)

Voltmeter	Ammeter	Location	Reference	
			Figure	Key
-16.5±0.5	8.0 amp max	1253	2-13	1,3
+12.0±0.5	2.0 amp max	1253	2-13	4,6
-8.5±0.5	6.0 amp max	1253	2-12	1,3
-6.5±0.5	2.3 amp max	1253	2-12	4,6
-16.5±0.5	6.5 amp max	1254	2-13	1,3
+12.0±0.5	2.6 amp max	1254	2-13	4,6

Table 2-12. Normal Voltmeter and Ammeter Indications (LUT)

Voltmeter	Ammeter	Location	Reference	
			Figure	Key
-16.5±0.5	6.5 amp max	1256	2-13	1,3
+12.0±0.5	1.5 amp max	1256	2-13	4,6
-8.5±0.5	3.5 amp max	1256	2-12	1,3
-6.5±0.5	0.5 amp max	1256	2-12	4,6

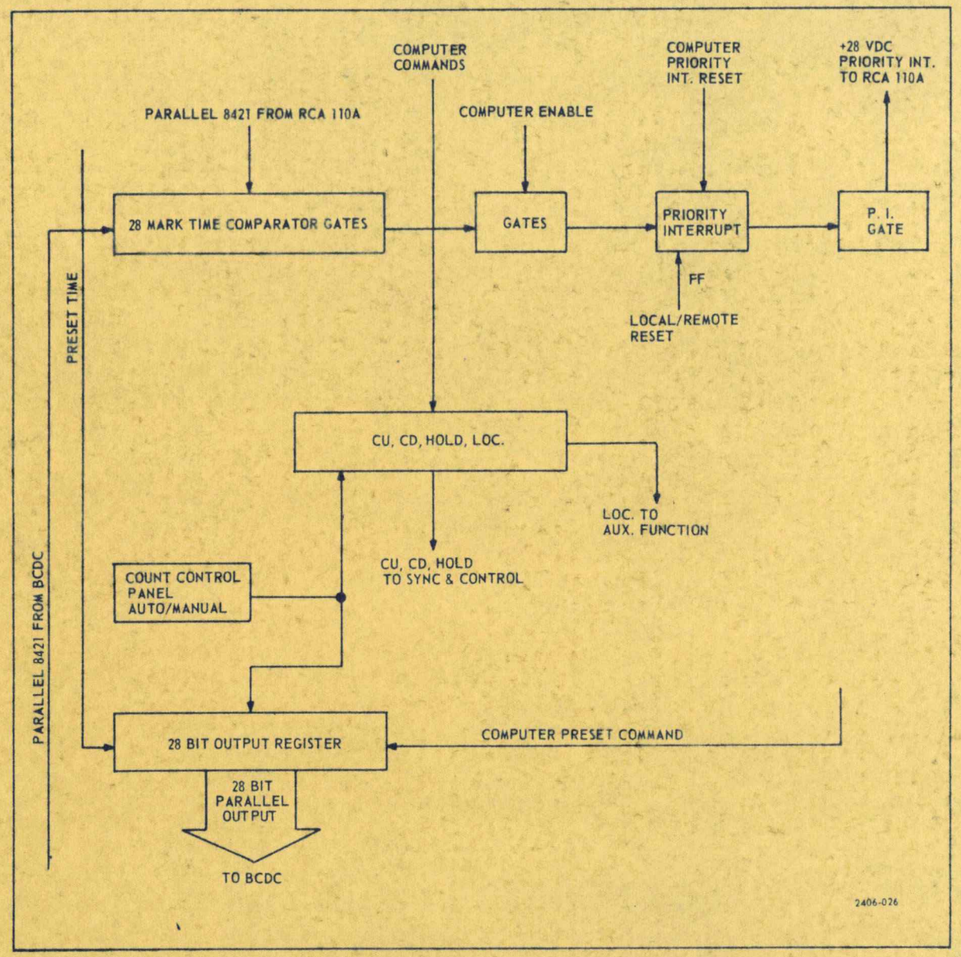


Figure 3-12. Computer Interface Block Diagram

which divides the 50 kc to 2 kc. The 2-kc signal, routed through driver board A1A19, is sent to the binary counter/gray code converter (1254A2) where it is used as an emergency backup in case the 2-kc signal from MILA is lost.

3.11.2 The 50-kc phase A feeds a nine-stage counter, composed of flip-flops on boards A1A5, A1A7, A1A8, A1A10, and is divided down to 100 pps. Gated outputs from these flip-flops includes the $\overline{C2}$ (NOT) pulse and the CNIP pulse. The 100-pps signal is routed to a sync selector, composed of gates A1A1, A1A3, and flip-flop A1A2. The sync selector, resettable upon command, compares the 100 pps with the MILA 100 pps. The output of the sync selector is fed in parallel to two 100:1 dividers. One divider, composed of flip-flops on boards A2A3 and A2A4, generates the uncontrolled 1 pps which is sent to the data link encoder and also external to the count clock system. The other divider, composed of flip-flops on boards A1A18 and A3A1, generates the controlled 1 pps which is routed to the BCDC drawer (1371A2) and used as a trigger for the seconds X1 counter. The input to the controlled 1-pps divider is routed through gate A1A17 and stops the generation of the controlled 1 pps which, in turn, stops the counters in the BCDC drawer.

3.11.3 The sync and control drawer also contains the logic for controlling count-up, count-down, reset, and preset commands. Outputs from the count-up and count-down logic are (1) routed to the BCDC to control the direction of counting by the counters, (2) routed to the status board in the auxiliary function drawer along with the hold command, which controls the light indicators on the count test panel, count control panel, and the RCA computer.

3.12 COMPUTER INTERFACE (40M08208)

1371A4/1255A2

3.12.1 The primary function of the computer interface drawer (see figure 3-11) is to interface the Count Clock System with the RCA computer. Sufficient logic is included to make the computer compatible with the Count Clock System in four areas (1) System Function Control, (2) Mark Count Time, (3) Preset Count Time, and (4) Lift-Off Command (LOC).

3.12.2 The first area -- System Function Control -- is shown in figure 3-12. When the CCS is in automatic (computer) control (see Chapter 2, Section II, Operating Instructions) the RCA computer has complete functional control (count-up, count-down, and hold) of the Count Clock System. This is accomplished by computer-initiated commands applied to J4 of the computer interface drawer which is enabled through gates to the sync and control (1371A3), by the auto manual switch on the count control panel.

503 & SUBS.

3.12.3 (Deleted)

3.12.4 Preset Count Time is the second area of interface. Preselected count time is received from the RCA computer on J4 as 28 bits of BCD (8421) information. The BCD bits are steered into a 28-bit output register where they await a preset command from the computer. The preset command, enabled by the auto/manual switch on the count control panel, toggles the output register, and presets the count time into the BCDC (1371A2). 503 & SUBS.

3.12.5 The third and last interface, Lift-Off Command (LOC), is outlined as follows: The RCA computer is used as a secondary source of lift-off command for the CCS. This command is enabled through the computer interface, by the auto/manual switch on the count control panel, to the auxiliary function panel (1372A2), and then routed to the sync and control.

3.13 TIMED OUTPUT COMMANDS (40M07013)

1371A5/1255A7

3.13.1 The TOC drawer (see figures 3-13 and 3-14) provides eight discrete outputs to the system integration rack at individually programmed times. Programming is accomplished by the setting of the 72 switches located inside the door on the front panel. Each of 8 rows contains 8 rotary switches, which are used to set up BCD comparators in conjunction with 8 toggle switches to select either count-up or count-down status. Within each horizontal row, time may be preset from zero to ±99:23:59:59 (days, hours, minutes, seconds, counting up or counting down).

3.13.2 Count time received in binary coded decimal (BCD) format is applied to the inverter-emitter follower module inputs. For each input, two outputs, a true and a false, are applied to the diode matrix decoder module. The decoders are connected in parallel to the preset switches, and time is selected and applied to the TOC gate standard module (see figure 15). When the BCD input compares with the preselected time, all inputs from the TOC preset switches to the gate will be logic 1's (0 vdc), and a TOC output of +28 vdc will be present. This condition will remain until either the input code is changed, or one of the preset switches is changed, which will inhibit the gate, and the output will return to zero.

3.14 COUNT TEST PANEL (40M07042)

1371A6

3.14.1 See figure 2-1 and associated description of controls and indicators.

3.15 DECODER AND READOUT DRAWER (40M07010)

1371A7/1255A6

3.15.1 The decoder and readout drawer (see Advanced Electrical Schematic 40M08357 and figure 3-16) receives the count time, in BCD code, from the BCDC drawer and the count status from the sync and control drawer. The 8421 time is decoded to a format compatible with the 7-bar decimal readout assembly, and is displayed from zero to 99:23:59:59 (days, hours, minutes, and seconds) with the count status -- plus, minus, or hold (+, -, or H).

3.15.2 As an example, reference to figure 3-17, the days X10 section of the decoder and readout drawer is shown. The BCD input code is applied to the inverter and emitter

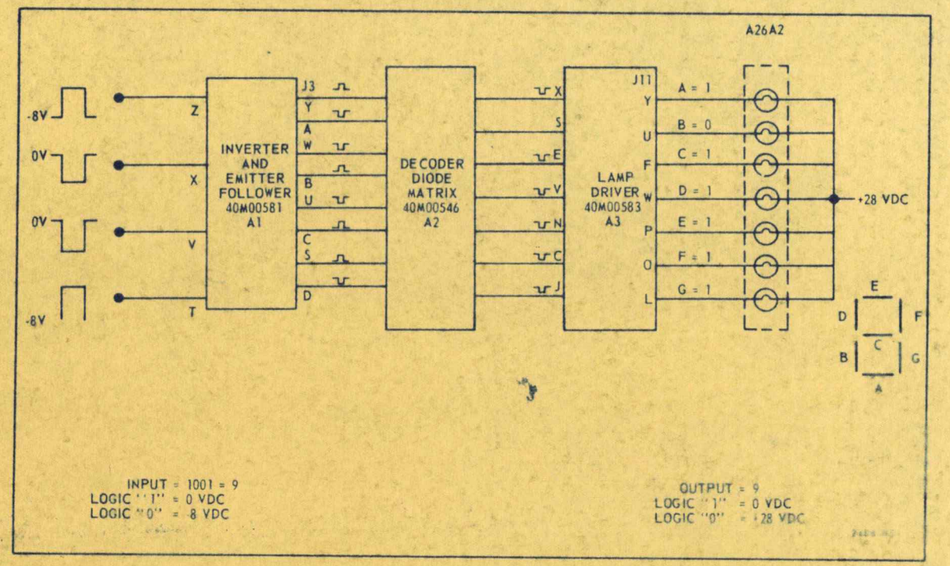


Figure 3-17. Typical Decoder Circuit

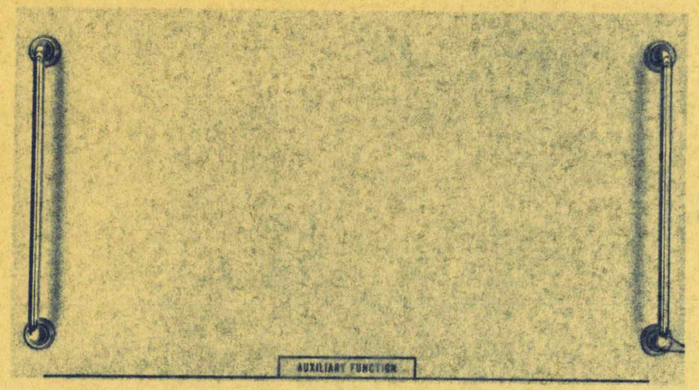


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Figure 3-18. Auxiliary Function

follower board (40M00581) in the form of logic 1's and 0's. The output from this board contains the original input bits and their complements. These 8 bits are applied to the decoder board (40M00546) which utilizes a diode matrix to decode the 8 bits to a 7-bar format representing numerical 0 through 9. The 7-bar format triggers the lamp driver board (40M00583) which illuminates the correct bar lights in the readout assembly.

3.15.3 The minus status is displayed at all times but the plus and hold status are applied upon command. The count-up indication (-8 vdc) from the sync and control drawer is applied to module A7 (40M00581), pin V. The output on pin C triggers lamp driver module A25 (40M00583), pin V. The output from the lamp driver on pin W illuminates the status indication readout assembly (A26A1).

3.15.4 The hold indication (-8 vdc), upon command, supplies identical circuitry on the same modules to illuminate the hold (H) light.

3.16 AUXILIARY FUNCTION PANEL (40M08212)

1372A2

3.16.1 The auxiliary function drawer (see figures 3-18 and 3-19) contains the following circuits:

503 & SUBS.

a. Decision and output circuits for the IRIG Format B signal which is utilized throughout the launch complex timing circuits. The IRIG Format B output signal is generated by the MILA timing facility.

b. Conditioning circuitry to receive lift-off commands, the output being routed to the sync and control drawer, triggering lift-off.

c. Control circuits for the count time and status indicators on the count test panel and the count control panel. Input levels are -8 or 0 vdc from the sync and control drawer and outputs are 0 or +28 vdc used to illuminate status indicators.

3.17 VCO LINE DRIVER DRAWER (40M08305)

1372A3

3.17.1 The VCO line driver drawer (see figures 3-6 and 3-20) located in the 1372 rack consists of: (1) voltage-controlled oscillator; (2) line driver amplifier and; (3) -28 volt dc power supply used with a +28 volt dc input to power the line driver amplifier. There is one input from the DLE, and one output to the transmission line.

3.17.2 The VCO has a frequency range of from not less than 530 kc to not greater than 670 kc. Adjustment resistor R4 (LOW) is used to set the output frequency at 565 kc with the input at a logic 1 (0 vdc). The upper frequency of 635 kc is set by R5 (HI) with the input at a logic 0 (-8 vdc).

3.17.3 The output of the VCO, modulated by the incoming data, is fed into a transformer, with the secondary connected to the input of the line driver amplifier, and signal ground. The outputs of the differential line driver power amplifier are connected by a coaxial line to the 2-wire shielded transmission line.

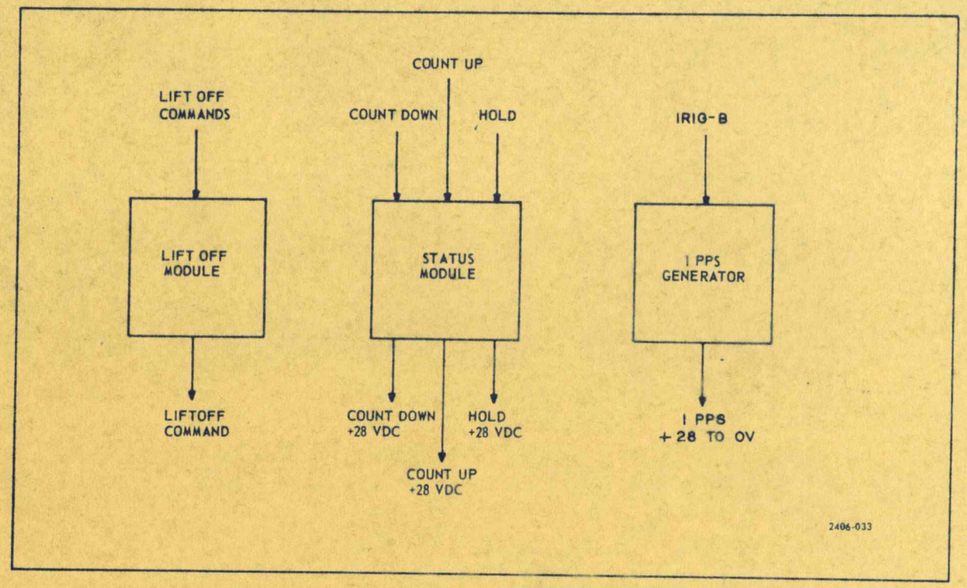

Figure 3-19. Auxiliary Function Drawer

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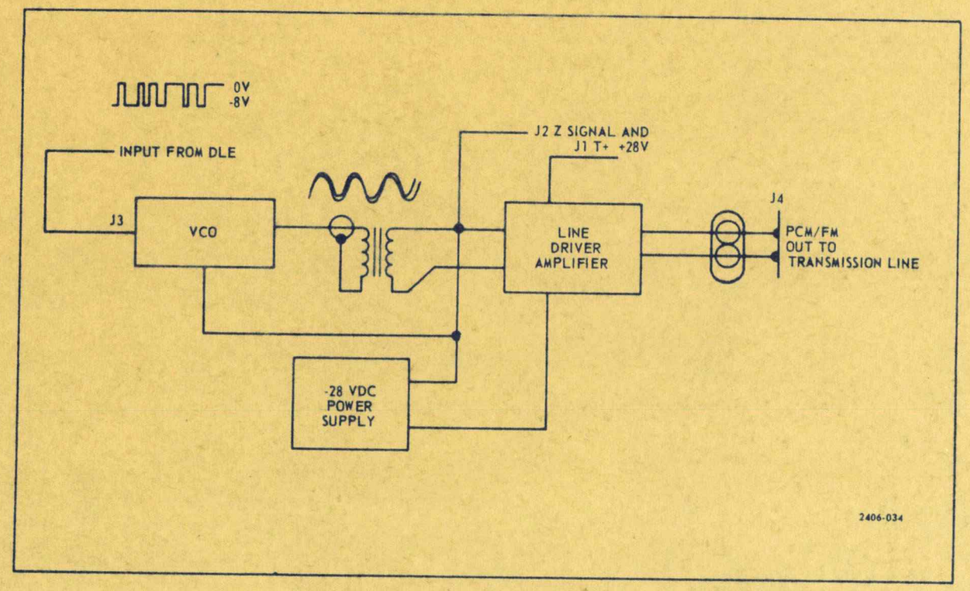

Figure 3-20. VCO Line Driver Circuit

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3.18 DATA LINK ENCODER (40M08285)

1372A4

3.18.1 The data link encoder (see figure 3-21) has the following primary functions: (1) generating the "sync word"; (2) inserting "status" and "address" information following "sync word"; (3) converting parallel gray code and count time into serial form following address; and (4) transmitting this serial pulse train to the VCO for pulse code modulation of the VCO generated carrier.

3.18.2 There are six basic inputs to the DLE (see figure 3-22) which will be discussed before a generalized discussion of the DLE is undertaken. These inputs are: (1) 100-kc pulses; (2) 1-kc NOT pulses; (3) 1 pps; (4) status information; (5) real time (gray code); and (6) count time.

3.18.3 The 100-kc square wave pulses are generated by the crystal-controlled oscillator located in the 1372A5 monitor panel drawer. This 100-kc pulse train is divided to 50 kc, and is used for toggling and gating within the DLE to shift the data register, and maintain proper timing sequences. This 100-kc signal enters the DLE through J01, pin H+, from 1372A1J03, pin H+, routed through the patch panel from 1372A1J07, pin AA.

3.18.4 The 1-kc NOT pulses are generated in the binary counter/gray code converter drawer (BC/GCC) located in the 1254 rack. These pulses are generated by a division of MILA 2 kc or internal 2 kc and are dependent upon the proper sequencing of gray code with Eastern Standard Time.

3.18.5 The 1-kc NOT pulses are used in the DLE for (1) generating the sync word at a 1-kc rate; (2) generating status word at a 1-kc rate; (3) adding bits to pulse train, during the time that no count time or real time data is transmitted, to enhance synchronizing at LUT. This 1-kc pulse train enters the DLE through J01 pin G+ from 1372A1J03 pin G+, routed through the patch panel from 1372A1J08 pin DD.

3.18.6 The 1 pps (uncontrolled) is generated in the sync and control drawer located in the 1371 rack, and is derived from the 100-kc crystal-controlled oscillator. It is used in the DLE to generate the 1-pps data bit, the count and real time address, and gating of count time and real time data into the encoder shift register. The 1-pps pulse enters the DLE through J01 pin F+, routed through the patch panel to 1372A1J07 pin Y+ and J11 pin C+.

3.18.7 The status information signals - auto/manual, carry not in progress (CNIP), hold, count-up, and 1 pps controlled - are all generated in the sync and control drawer located in the 1371 rack. Auto/manual, hold, and count-up are functions relating settings of switches located on the count test and/or count control panels. The 1-pps controlled pulse is derived from the 100-kc crystal-controlled oscillator and is controlled (ON or OFF) in the sync and control drawer by count time status.

3.18.8 Real time (gray code) is derived in the BC/GCC drawer located in the 1254 rack. It is stored in gates in the DLE until the proper time, when it is gated into the DLE shift register by the real time transfer pulse.

3.31 SYNCHRONIZER

1255A4

3.31.1 The synchronizer (figure 2-9) is located in the 1255 rack and has one input and multiple outputs. The one input is the PCM signal from the line receiver which may still contain noise and/or jitter. Of all outputs, only the NRZ-C (J6), 180° clock (J12), and 270° clock (J13) are applicable to the data receive system. (Refer to Operation and Maintenance Manual for PCM Bit Synchronizer, Model 305-SG, Monitor Systems, inc.)

3.32 DATA LINK DECODER (40M08299)

1255A3

3.32.1 The data link decoder (see figures 3-38 and 3-39) is located in the 1255 rack, and primarily performs the inverse of the data link encoder by decoding the serial PCM data link signal containing count time, status, and real time (gray code) back into parallel information for display, generation of other signals or distribution to other facilities within the LUT.

3.32.2 There are but three inputs to the DLD which include the PCM data link pulse train, 180° clock and 270° clock. All inputs are received from the synchronizer. The outputs, however, are numerous and listed as follows:

a. Count time - binary coded decimal

b. Status

c. Real time (gray code) accurate to 1 millisecond

d. 1 pps to Saturn integration rack

e. 1 pps (controlled) to MILA

f. 1 kc to RCA computer and digital events evaluator

g. 1 pps to terminal countdown sequencer

h. Carry not in progress - informs computer that no change in data is occurring and safe to read out data.

503 & SUBS.

3.32.3 There are nine specific subunits (see figure 3-40) into which the data link decoder can be divided to simplify and facilitate discussion; these are as follows:

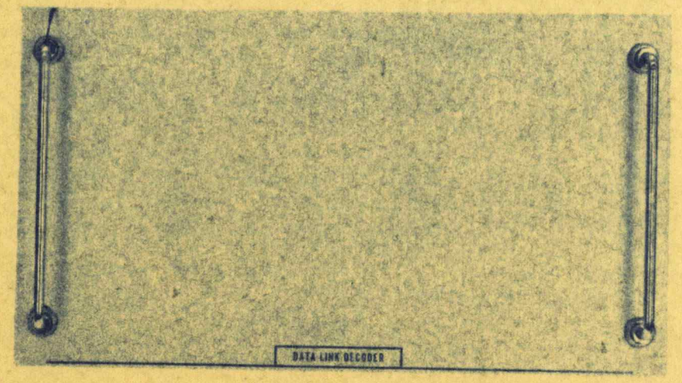
a. Sync decoder and timing unit.

b. A 46-bit input data shift register.

c. A 5-bit status register.

d. A 28-bit count time readout register.

e. Real time transfer gates to real time shift register.



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2406-052

Figure 3-38. Data Link Decoder

which divides the 50 kc to 2 kc. The 2-kc signal, routed through driver board A1A19, is sent to the binary counter/gray code converter (1254A2) where it is used as an emergency backup in case the 2-kc signal from MILA is lost.

3.11.2 The 50-kc phase A feeds a nine-stage counter, composed of flip-flops on boards A1A5, A1A7, A1A8, A1A10, and is divided down to 100 pps. Gated outputs from these flip-flops includes the $\overline{C2}$ (NOT) pulse and the CNIP pulse. The 100-pps signal is routed to a sync selector, composed of gates A1A1, A1A3, and flip-flop A1A2. The sync selector, resettable upon command, compares the 100 pps with the MILA 100 pps. The output of the sync selector is fed in parallel to two 100:1 dividers. One divider, composed of flip-flops on boards A2A3 and A2A4, generates the uncontrolled 1 pps which is sent to the data link encoder and also external to the count clock system. The other divider, composed of flip-flops on boards A1A18 and A3A1, generates the controlled 1 pps which is routed to the BCDC drawer (1371A2) and used as a trigger for the seconds X1 counter. The input to the controlled 1-pps divider is routed through gate A1A17 and stops the generation of the controlled 1 pps which, in turn, stops the counters in the BCDC drawer.

3.11.3 The sync and control drawer also contains the logic for controlling count-up, count-down, reset, and preset commands. Outputs from the count-up and count-down logic are (1) routed to the BCDC to control the direction of counting by the counters, (2) routed to the status board in the auxiliary function drawer along with the hold command, which controls the light indicators on the count test panel, count control panel, and the RCA computer.

3.12 COMPUTER INTERFACE (40M08208)

1371A4/1255A2

3.12.1 The primary function of the computer interface drawer (see figure 3-11) is to interface the Count Clock System with the RCA computer. Sufficient logic is included to make the computer compatible with the Count Clock System in four areas (1) System Function Control, (2) Mark Count Time, (3) Preset Count Time, and (4) Lift-Off Command (LOC).

3.12.2 The first area -- System Function Control -- is shown in figure 3-12. When the CCS is in automatic (computer) control (see Chapter 2, Section II, Operating Instructions) the RCA computer has complete functional control (count-up, count-down, and hold) of the Count Clock System. This is accomplished by computer-initiated commands applied to J4 of the computer interface drawer which is enabled through gates to the sync and control (1371A3), by the auto manual switch on the count control panel.

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3.12.3 (Deleted)

3.12.4 Preset Count Time is the second area of interface. Preselected count time is received from the RCA computer on J4 as 28 bits of BCD (8421) information. The BCD bits are steered into a 28-bit output register where they await a preset command from the computer. The preset command, enabled by the auto/manual switch on the count control panel, toggles the output register, and presets the count time into the BCDC (1371A2). 503 & SUBS.

3.12.5 The third and last interface, Lift-Off Command (LOC), is outlined as follows: The RCA computer is used as a secondary source of lift-off command for the CCS. This command is enabled through the computer interface, by the auto/manual switch on the count control panel, to the auxiliary function panel (1372A2), and then routed to the sync and control.

3.13 TIMED OUTPUT COMMANDS (40M07013)

1371A5/1255A7

3.13.1 The TOC drawer (see figures 3-13 and 3-14) provides eight discrete outputs to the system integration rack at individually programmed times. Programming is accomplished by the setting of the 72 switches located inside the door on the front panel. Each of 8 rows contains 8 rotary switches, which are used to set up BCD comparators in conjunction with 8 toggle switches to select either count-up or count-down status. Within each horizontal row, time may be preset from zero to ±99:23:59:59 (days, hours, minutes, seconds, counting up or counting down).

3.13.2 Count time received in binary coded decimal (BCD) format is applied to the inverter-emitter follower module inputs. For each input, two outputs, a true and a false, are applied to the diode matrix decoder module. The decoders are connected in parallel to the preset switches, and time is selected and applied to the TOC gate standard module (see figure 15). When the BCD input compares with the preselected time, all inputs from the TOC preset switches to the gate will be logic 1's (0 vdc), and a TOC output of +28 vdc will be present. This condition will remain until either the input code is changed, or one of the preset switches is changed, which will inhibit the gate, and the output will return to zero.

3.14 COUNT TEST PANEL (40M07042)

1371A6

3.14.1 See figure 2-1 and associated description of controls and indicators.

3.15 DECODER AND READOUT DRAWER (40M07010)

1371A7/1255A6

3.15.1 The decoder and readout drawer (see Advanced Electrical Schematic 40M08357 and figure 3-16) receives the count time, in BCD code, from the BCDC drawer and the count status from the sync and control drawer. The 8421 time is decoded to a format compatible with the 7-bar decimal readout assembly, and is displayed from zero to 99:23:59:59 (days, hours, minutes, and seconds) with the count status -- plus, minus, or hold (+, -, or H).

3.15.2 As an example, reference to figure 3-17, the days X10 section of the decoder and readout drawer is shown. The BCD input code is applied to the inverter and emitter

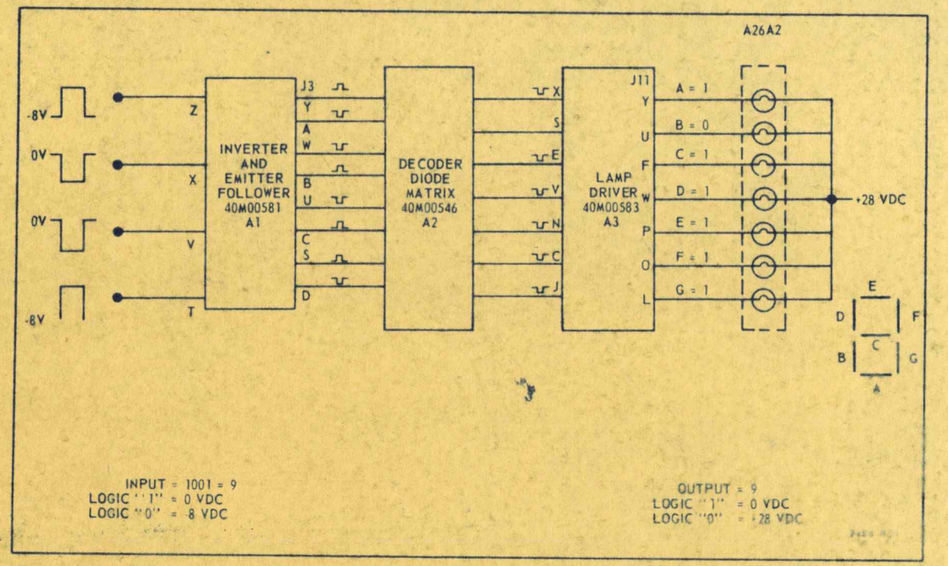
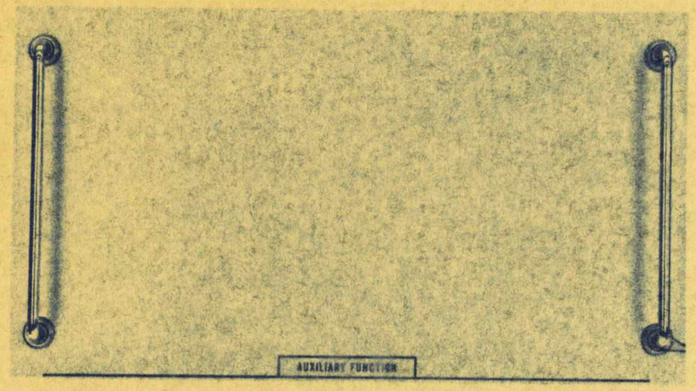


Figure 3-17. Typical Decoder Circuit



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2406-032

Figure 3-18. Auxiliary Function

follower board (40M00581) in the form of logic 1's and 0's. The output from this board contains the original input bits and their complements. These 8 bits are applied to the decoder board (40M00546) which utilizes a diode matrix to decode the 8 bits to a 7-bar format representing numerical 0 through 9. The 7-bar format triggers the lamp driver board (40M00583) which illuminates the correct bar lights in the readout assembly.

3.15.3 The minus status is displayed at all times but the plus and hold status are applied upon command. The count-up indication (-8 vdc) from the sync and control drawer is applied to module A7 (40M00581), pin V. The output on pin C triggers lamp driver module A25 (40M00583), pin V. The output from the lamp driver on pin W illuminates the status indication readout assembly (A26A1).

3.15.4 The hold indication (-8 vdc), upon command, supplies identical circuitry on the same modules to illuminate the hold (H) light.

3.16 AUXILIARY FUNCTION PANEL (40M08212)

1372A2

3.16.1 The auxiliary function drawer (see figures 3-18 and 3-19) contains the following circuits:

503 & SUBS.

a. Decision and output circuits for the IRIG Format B signal which is utilized throughout the launch complex timing circuits. The IRIG Format B output signal is generated by the MILA timing facility.

b. Conditioning circuitry to receive lift-off commands, the output being routed to the sync and control drawer, triggering lift-off.

c. Control circuits for the count time and status indicators on the count test panel and the count control panel. Input levels are -8 or 0 vdc from the sync and control drawer and outputs are 0 or +28 vdc used to illuminate status indicators.

3.17 VCO LINE DRIVER DRAWER (40M08305)

1372A3

3.17.1 The VCO line driver drawer (see figures 3-6 and 3-20) located in the 1372 rack consists of: (1) voltage-controlled oscillator; (2) line driver amplifier and; (3) -28 volt dc power supply used with a +28 volt dc input to power the line driver amplifier. There is one input from the DLE, and one output to the transmission line.

3.17.2 The VCO has a frequency range of from not less than 530 kc to not greater than 670 kc. Adjustment resistor R4 (LOW) is used to set the output frequency at 565 kc with the input at a logic 1 (0 vdc). The upper frequency of 635 kc is set by R5 (HI) with the input at a logic 0 (-8 vdc).

3.17.3 The output of the VCO, modulated by the incoming data, is fed into a transformer, with the secondary connected to the input of the line driver amplifier, and signal ground. The outputs of the differential line driver power amplifier are connected by a coaxial line to the 2-wire shielded transmission line.

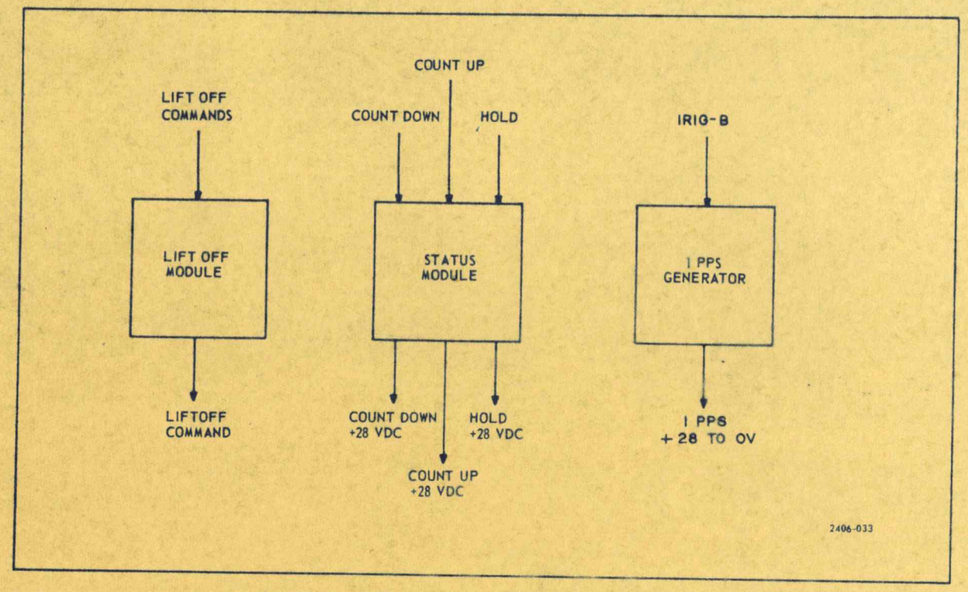

Figure 3-19. Auxiliary Function Drawer

503 & SUBS.

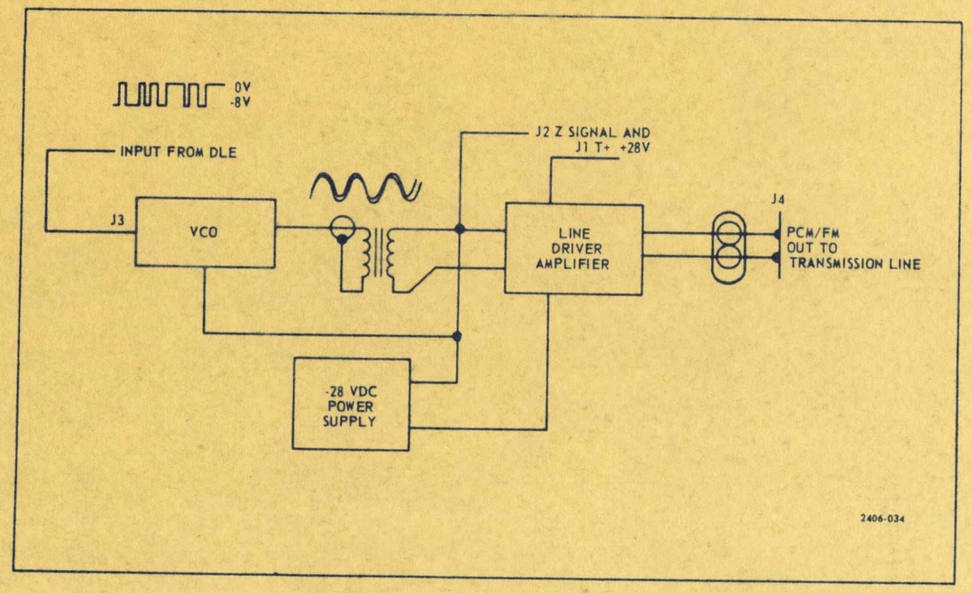

Figure 3-20. VCO Line Driver Circuit

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3.18 DATA LINK ENCODER (40M08285)

1372A4

3.18.1 The data link encoder (see figure 3-21) has the following primary functions: (1) generating the "sync word"; (2) inserting "status" and "address" information following "sync word"; (3) converting parallel gray code and count time into serial form following address; and (4) transmitting this serial pulse train to the VCO for pulse code modulation of the VCO generated carrier.

3.18.2 There are six basic inputs to the DLE (see figure 3-22) which will be discussed before a generalized discussion of the DLE is undertaken. These inputs are: (1) 100-kc pulses; (2) 1-kc NOT pulses; (3) 1 pps; (4) status information; (5) real time (gray code); and (6) count time.

3.18.3 The 100-kc square wave pulses are generated by the crystal-controlled oscillator located in the 1372A5 monitor panel drawer. This 100-kc pulse train is divided to 50 kc, and is used for toggling and gating within the DLE to shift the data register, and maintain proper timing sequences. This 100-kc signal enters the DLE through J01, pin H+, from 1372A1J03, pin H+, routed through the patch panel from 1372A1J07, pin AA.

3.18.4 The 1-kc NOT pulses are generated in the binary counter/gray code converter drawer (BC/GCC) located in the 1254 rack. These pulses are generated by a division of MILA 2 kc or internal 2 kc and are dependent upon the proper sequencing of gray code with Eastern Standard Time.

3.18.5 The 1-kc NOT pulses are used in the DLE for (1) generating the sync word at a 1-kc rate; (2) generating status word at a 1-kc rate; (3) adding bits to pulse train, during the time that no count time or real time data is transmitted, to enhance synchronizing at LUT. This 1-kc pulse train enters the DLE through J01 pin G+ from 1372A1J03 pin G+, routed through the patch panel from 1372A1J08 pin DD.

3.18.6 The 1 pps (uncontrolled) is generated in the sync and control drawer located in the 1371 rack, and is derived from the 100-kc crystal-controlled oscillator. It is used in the DLE to generate the 1-pps data bit, the count and real time address, and gating of count time and real time data into the encoder shift register. The 1-pps pulse enters the DLE through J01 pin F+, routed through the patch panel to 1372A1J07 pin Y+ and J11 pin C+.

3.18.7 The status information signals - auto/manual, carry not in progress (CNIP), hold, count-up, and 1 pps controlled - are all generated in the sync and control drawer located in the 1371 rack. Auto/manual, hold, and count-up are functions relating settings of switches located on the count test and/or count control panels. The 1-pps controlled pulse is derived from the 100-kc crystal-controlled oscillator and is controlled (ON or OFF) in the sync and control drawer by count time status.

3.18.8 Real time (gray code) is derived in the BC/GCC drawer located in the 1254 rack. It is stored in gates in the DLE until the proper time, when it is gated into the DLE shift register by the real time transfer pulse.

3.31 SYNCHRONIZER

1255A4

3.31.1 The synchronizer (figure 2-9) is located in the 1255 rack and has one input and multiple outputs. The one input is the PCM signal from the line receiver which may still contain noise and/or jitter. Of all outputs, only the NRZ-C (J6), 180° clock (J12), and 270° clock (J13) are applicable to the data receive system. (Refer to Operation and Maintenance Manual for PCM Bit Synchronizer, Model 305-SG, Monitor Systems, inc.)

3.32 DATA LINK DECODER (40M08299)

1255A3

3.32.1 The data link decoder (see figures 3-38 and 3-39) is located in the 1255 rack, and primarily performs the inverse of the data link encoder by decoding the serial PCM data link signal containing count time, status, and real time (gray code) back into parallel information for display, generation of other signals or distribution to other facilities within the LUT.

3.32.2 There are but three inputs to the DLD which include the PCM data link pulse train, 180° clock and 270° clock. All inputs are received from the synchronizer. The outputs, however, are numerous and listed as follows:

a. Count time - binary coded decimal

b. Status

c. Real time (gray code) accurate to 1 millisecond

d. 1 pps to Saturn integration rack

e. 1 pps (controlled) to MILA

f. 1 kc to RCA computer and digital events evaluator

g. 1 pps to terminal countdown sequencer

h. Carry not in progress - informs computer that no change in data is occurring and safe to read out data.

503 & SUBS.

3.32.3 There are nine specific subunits (see figure 3-40) into which the data link decoder can be divided to simplify and facilitate discussion; these are as follows:

a. Sync decoder and timing unit.

b. A 46-bit input data shift register.

c. A 5-bit status register.

d. A 28-bit count time readout register.

e. Real time transfer gates to real time shift register.

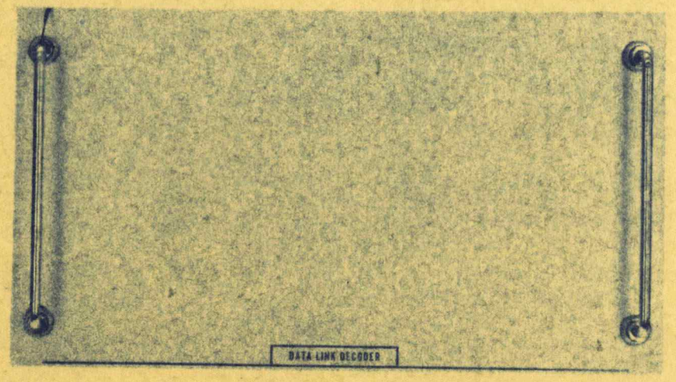

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Figure 3-38. Data Link Decoder

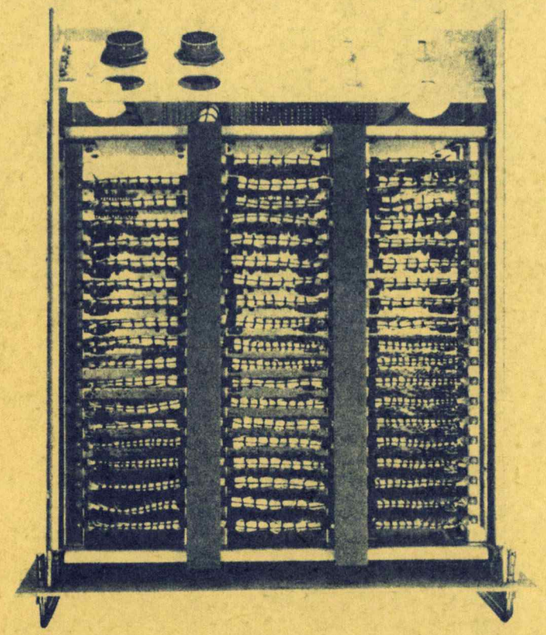

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Figure 3-39. Data Link Decoder (Rear View)

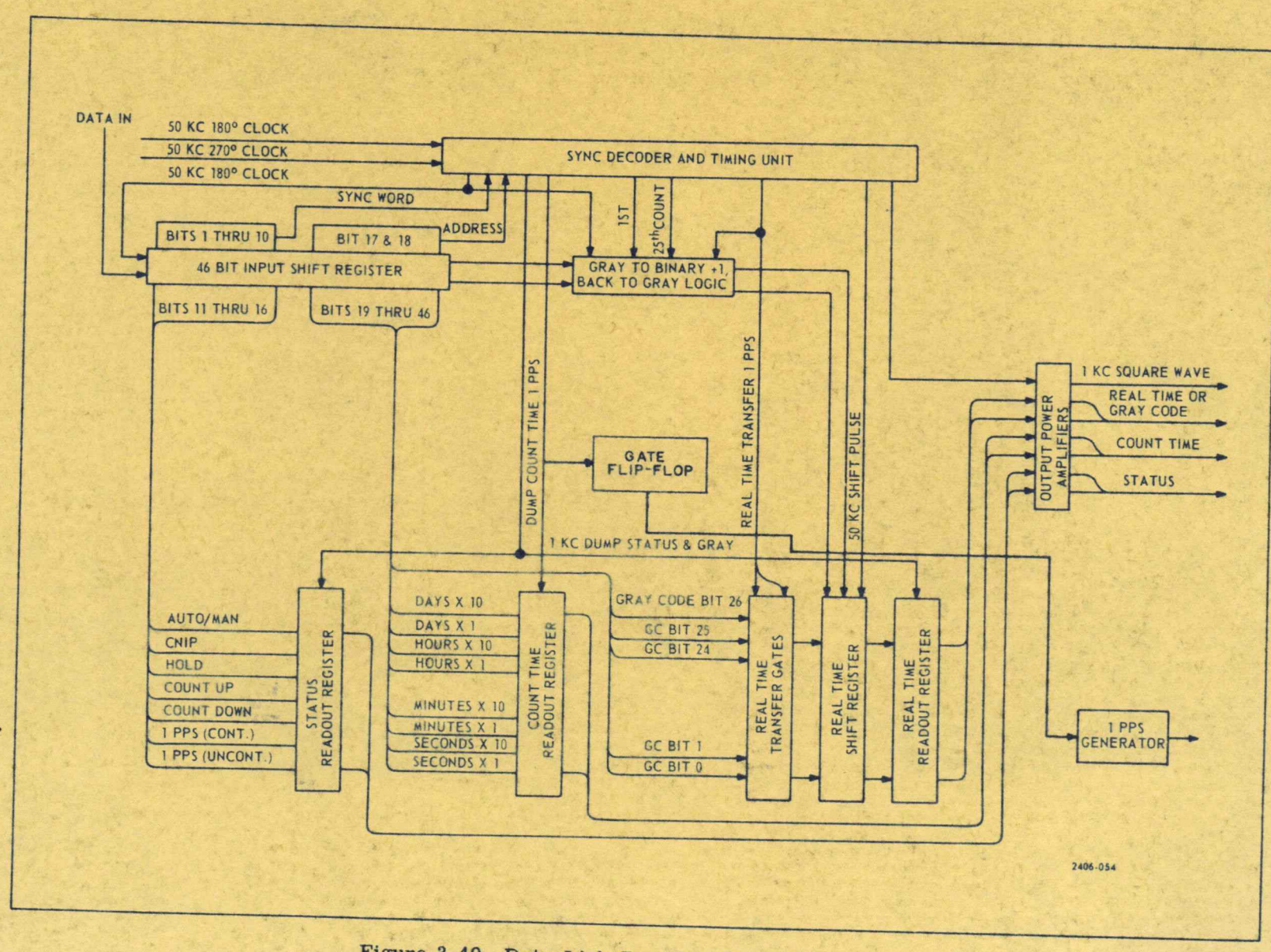

Figure 3-40. Data Link Decoder Block Diagram

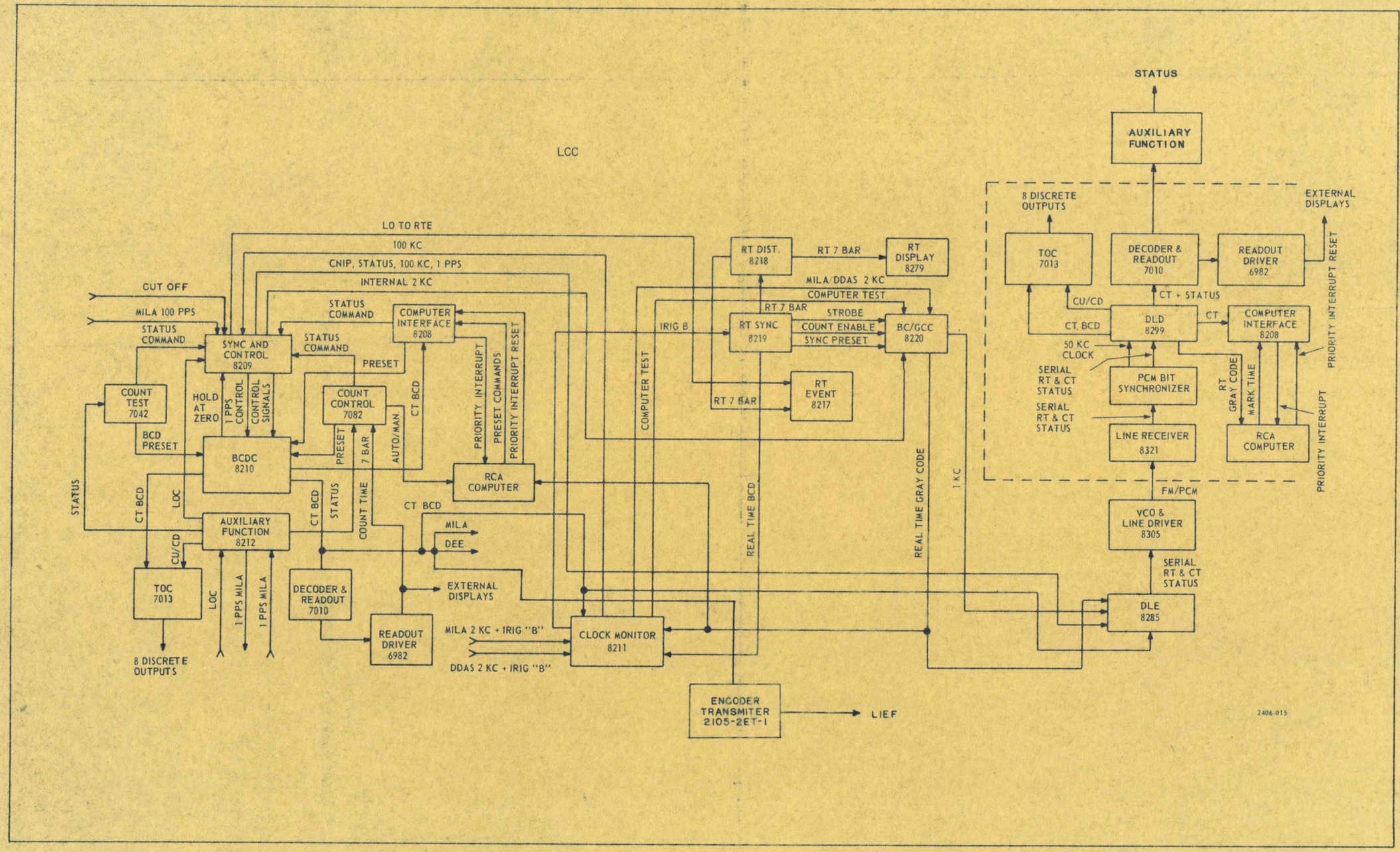

Figure 3-1. CCS Block Diagram

503 & SUBS.

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PART NO.	M.F.	REVISIONS	
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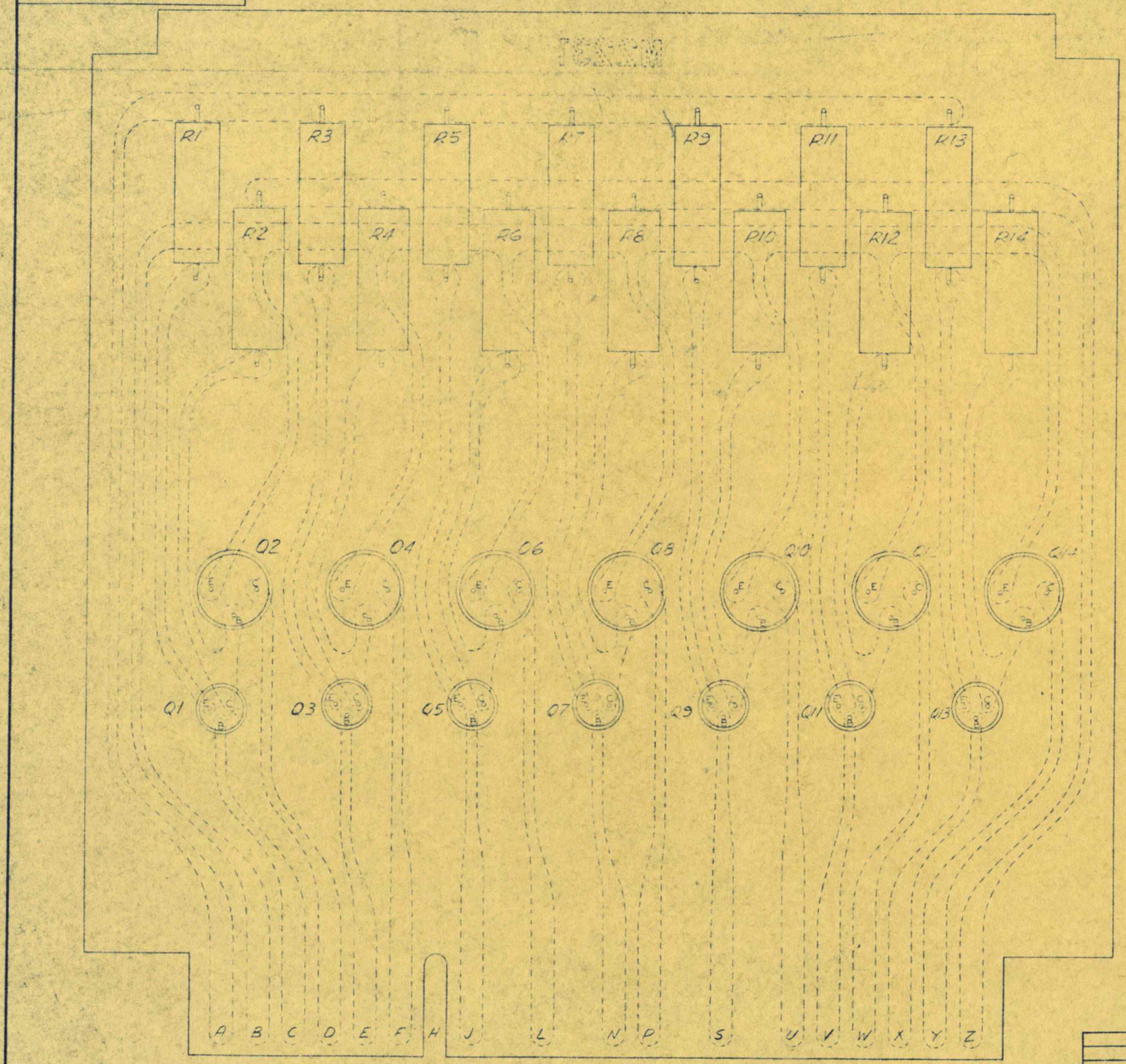
		A	INC. 2ND PC Cng. NOTES



NOTES —

1- PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-158.

2- CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-223 EXCEPT CONTACT AREA MUST BE KEPT FREE OF COATING MATERIAL. COATING TO BE APPLIED BY SPRAY PROCESS.

DESCRIPTION	COMP. NO.	MFG. OF N.	No. PER	M.F.R	MIL-TYPE
TRANSISTOR - 2N956	Q1, Q3, Q5, Q7, Q9, Q11, Q13		7	FAIRCHILD SEMICONDUCTOR	
TRANSISTOR - 2N2033	Q2, Q4, Q6, Q8, Q10, Q12, Q14		7	SILICON TRANSISTOR CORP.	
RESISTOR - 100 Ω, ½W, 1%	R1, R3, R5, R7, R9, R11, R13		7		RW65C
RESISTOR - 700 Ω, 3W, 5%	R2, R4, R6, R8, R10, R12, R14		7		RW69V

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS DECIMALS ANGLES	ORIGINAL DATE OF DRAWING 5-11-62	ASSEMBLY, M223I	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
		MATERIAL	DRAFTSMAN / CHECKER		
		HEAT TREATMENT	CHECKED / ENGINEER	STANDARD	
NEXT ASSY / USED ON		FINAL PROTECTIVE FINISH	SUBMITTED / APPROVED / DIRECTOR	WEIGHT CHECKER / DATE / CODE	DWG SIZE D — 40V00593
APPLICATION				SCALE / UNIT WEIGHT	SHEET / OF

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PART NO.		REVISIONS			
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			RETRACED WITHOUT CHANGE	10-29-65	

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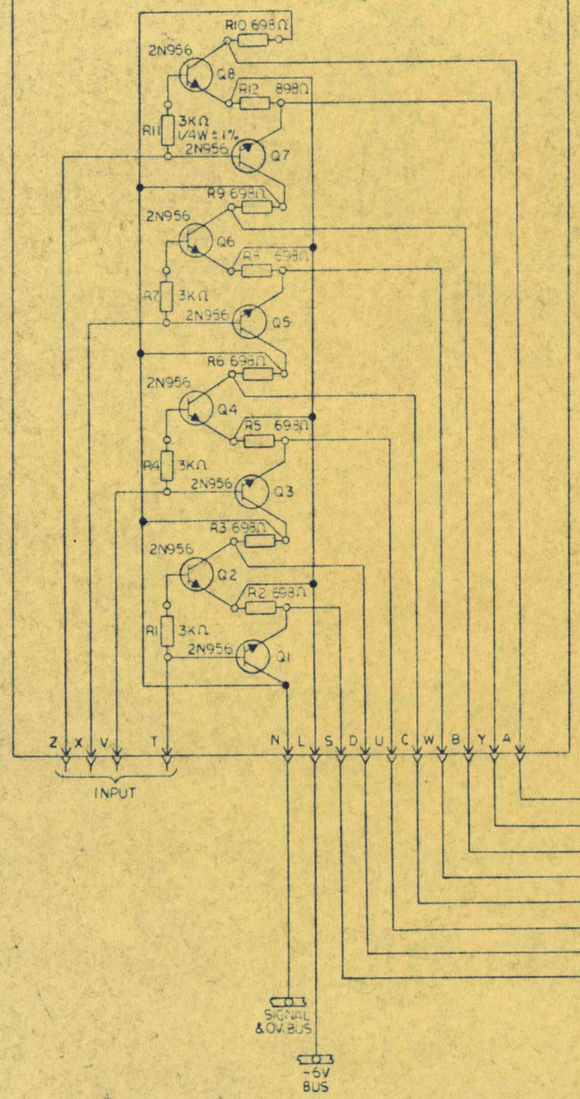

DIODE MOUNTING BOARD PC1971-1&2-B
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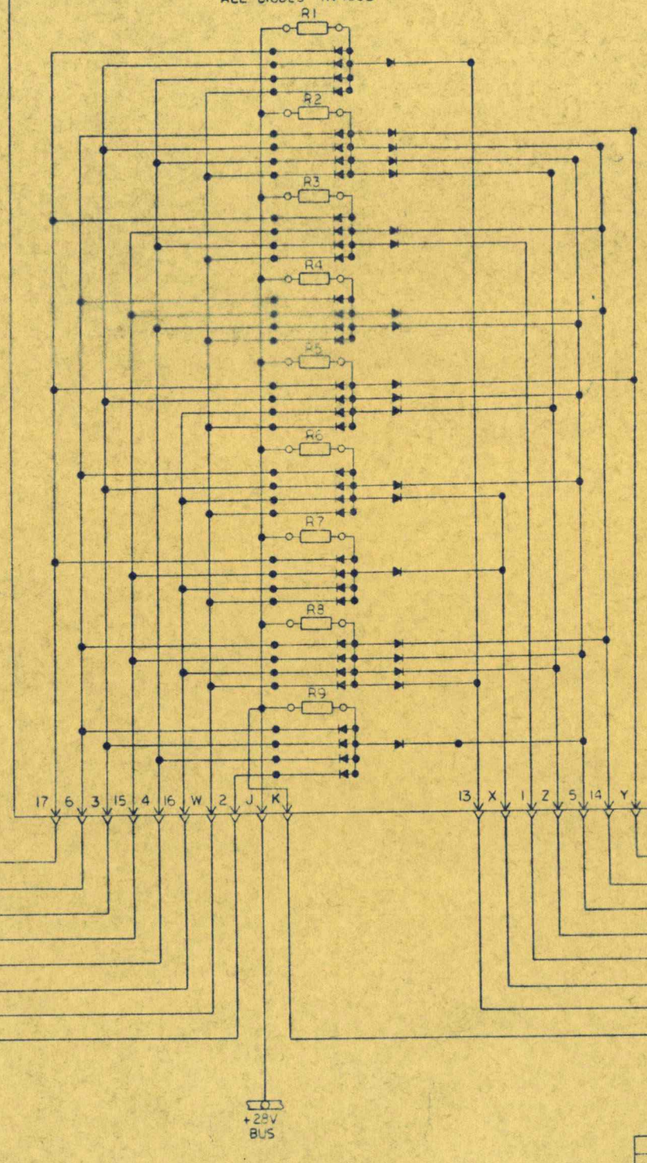
ALL DIODES 1N483B



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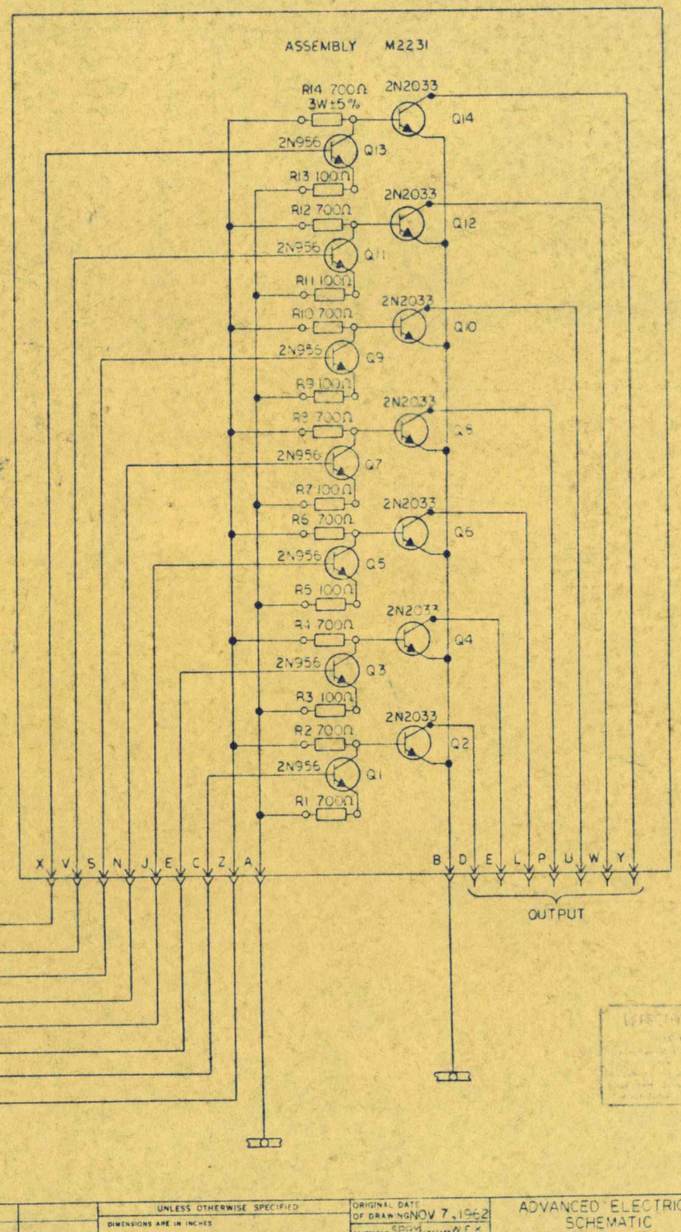

40M01422

EFFECTIVE ON SATURN 13

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS — DECIMALS — ANGLES —	ORIGINAL DATE OF DRAWING NOV 7, 1962	ADVANCED ELECTRICAL SCHEMATIC TYPICAL WINDOW DECODER 153A1A7 COUNT SYSTEM SATURN C-1 BLOCK II
NEXT ASSY / USED ON	MATERIAL	DRAFTSMAN SPRM / DESIGNER W.E.K.	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
APPLICATION	HEAT TREATMENT	CHECKED SLM / STRESS	
	FINAL PROTECTIVE FINISH	ENG. SYST. C.M.D. / ENGINEER	DWG SIZE D — 40M01422
		SUBMITTED R.M. ADEN	
		APPROVED / DIRECTOR	WEIGHT CHECKER / DATE / CODE
			SCALE — / UNIT WEIGHT — / SHEET OF

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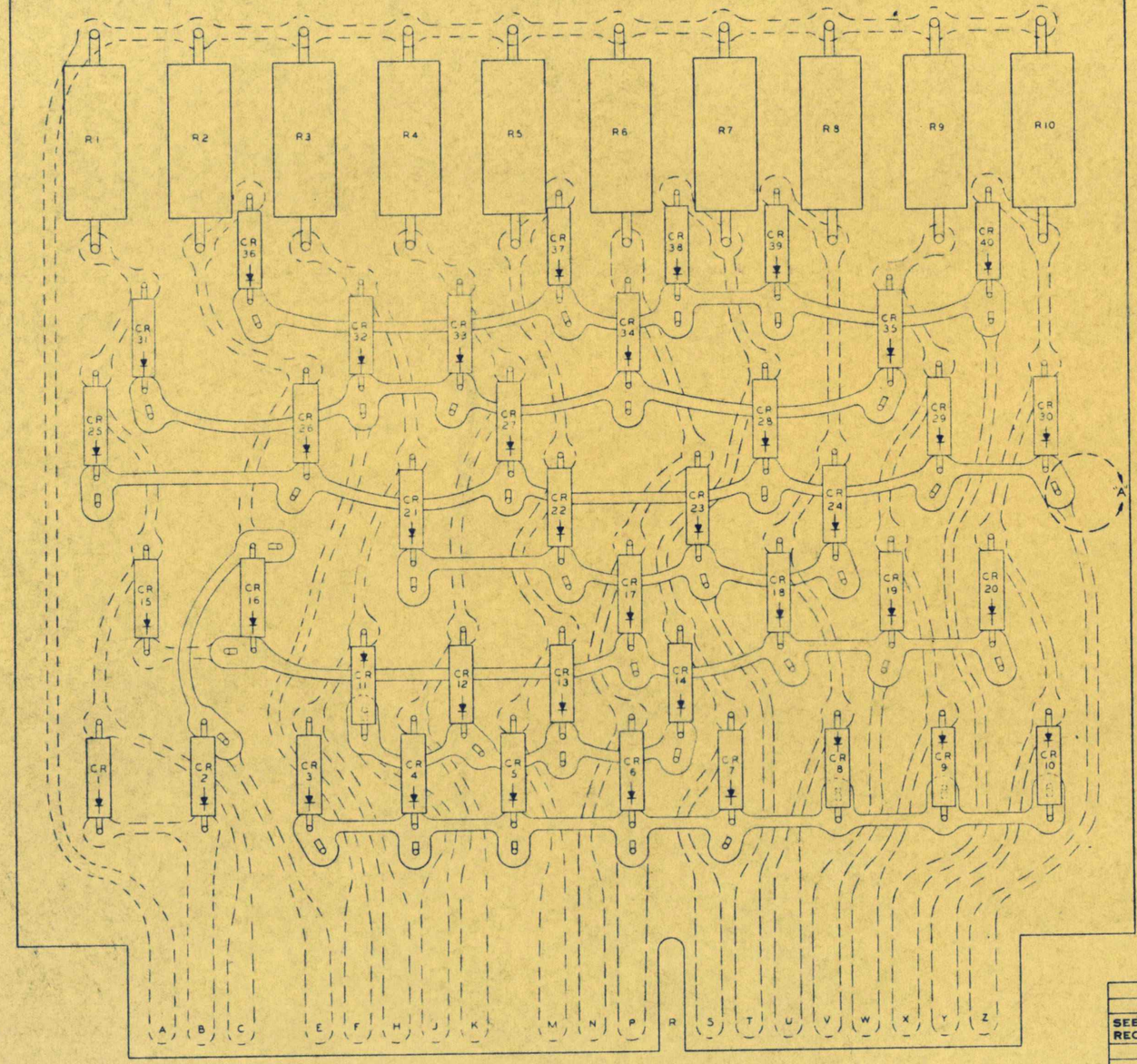
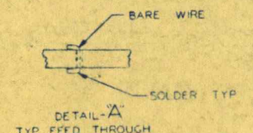
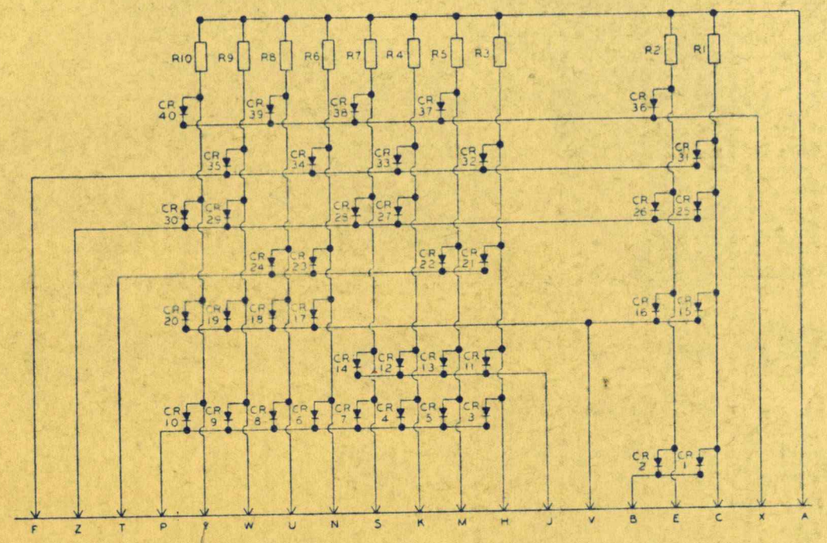
PART NO.	M.F. ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
		A	RE THRU R10 - LTR - WAS 50 K	10-15-64	KOS RAP
		B	INC ECO 'D' 726 & CHG NOTES	12-17-64	M.W.S.
			REDRAWN WITHOUT CHANGE	1-5-66	[illegible]

M-2802-2





DETAIL-'A'
TYP FEED THROUGH
39 PLACES



NOTES

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-158.
2. INSTALL 22 GA. FEED THROUGH JUMPER PRIOR TO COMPONENT INSTALLATION.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293, EXCEPT CONTACT AREA MUST BE KEPT FREE OF COATING MATERIAL. COATING TO BE APPLIED BY SPRAY PROCESS.

40M02103
B

DESCRIPTION	COMP NO	MFG PT NO.	NO REQD	MFG'R	MIL-TYPE
RESISTOR 1.6M, 1/2W, 5%	R1 THRU R10		10		RC20GF
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PID
7145
PIX
DATA CODE

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING 11-19-62	ASSEMBLY, M-2802 DECODER, BINARY CODED
	MATERIAL	DRAFTSMAN K.N.G. CHECKER	
	HEAT TREATMENT	CHECKED P.L.L. STRESS [illegible]	STANDARD
NEXT ASSY / USED ON	FINAL PROTECTIVE FINISH	ENGINEER E.M.A. ENGINEER W.H.G.	WEIGHT CHECKER / DATE / CODE
APPLICATION		SUBMITTED W.H. GOODHUE	SCALE 4/1 / UNIT WEIGHT
		APPROVED DIRECTOR	SHEET 1 OF 1

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

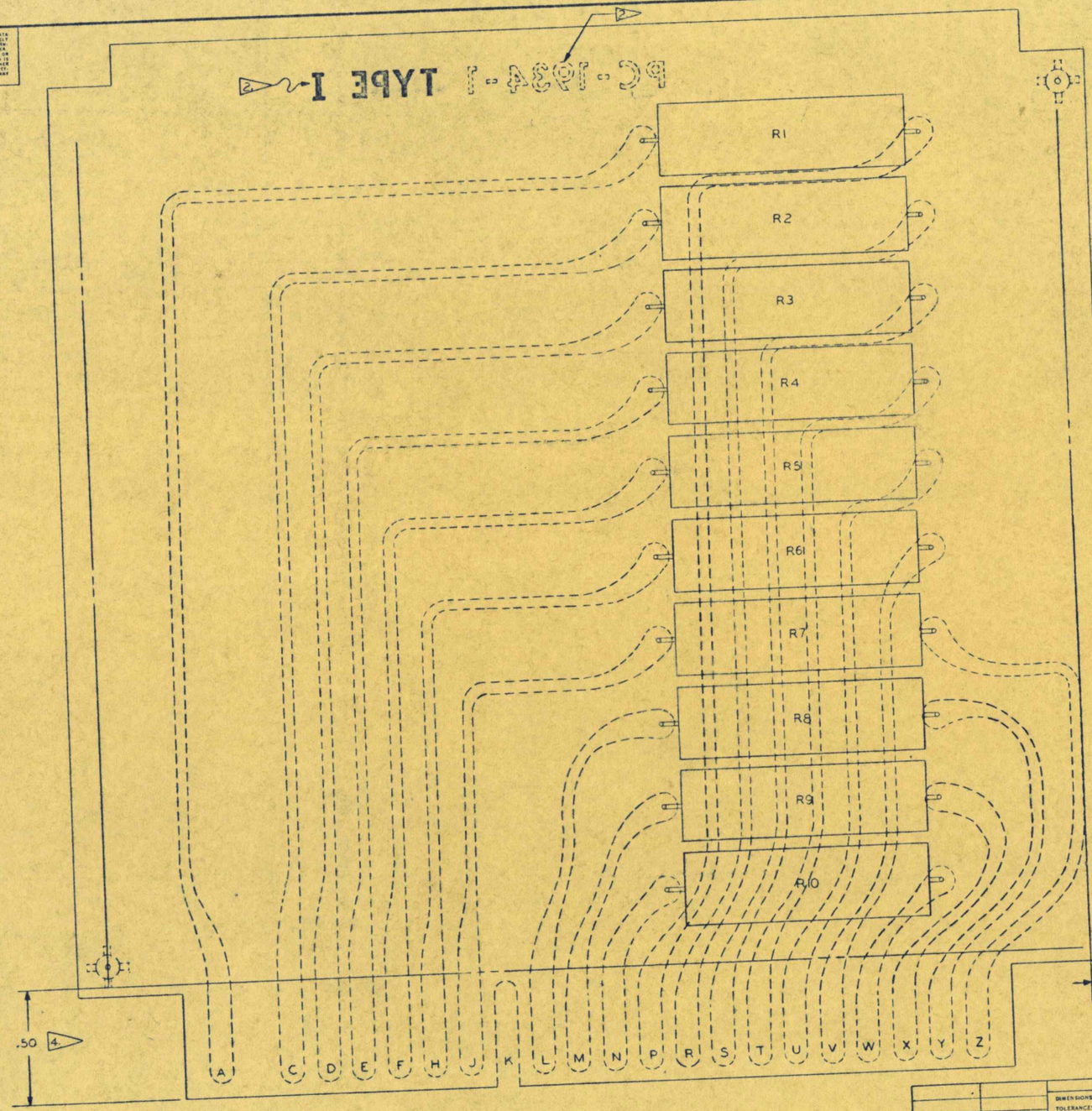
DWG SIZE D — 40M02103

IP

PART No.	M F	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
				REDRAWN WITHOUT CHANGE	3-3-66	
			A	INC EO 5P-63 & ADDED TOL	3-8-66	

MSFC FORM 422-B (AUG/67 1960)

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED, BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO



NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC200-4 OR MSFC-PROC-224.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATIONS PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.

40M02338

DESCRIPTION	COMP NO.	MFG. PT. NO.	NO. REQ'D	MFG'R
RESISTOR - 560 OHM 1/2 W 5%	R1-R20		20	

SP-63
7143
P9X
DISTR CODE

SEE ENGINEERING RECORDS

NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS
DECIMALS ±XX ±.03
ANGLES
MATERIAL
HEAT TREATMENT
FINAL PROTECTIVE FINISH 3.

ORIGINAL DATE OF DRAWING FEB 8, 63
DRAFTSMAN SUTHERMAN CHECKER AAK
CHECKER PLL STRESS
ENGINEER BNA ENG GOODHUE
SUBMITTED W H GOODHUE
APPROVED
DIRECTOR

ASSEMBLY,
PC-1934
TYPE I
SATURN C1 BLOCK II

WEIGHT CHECKER | DATE | CODE
SCALE 4/1 | UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

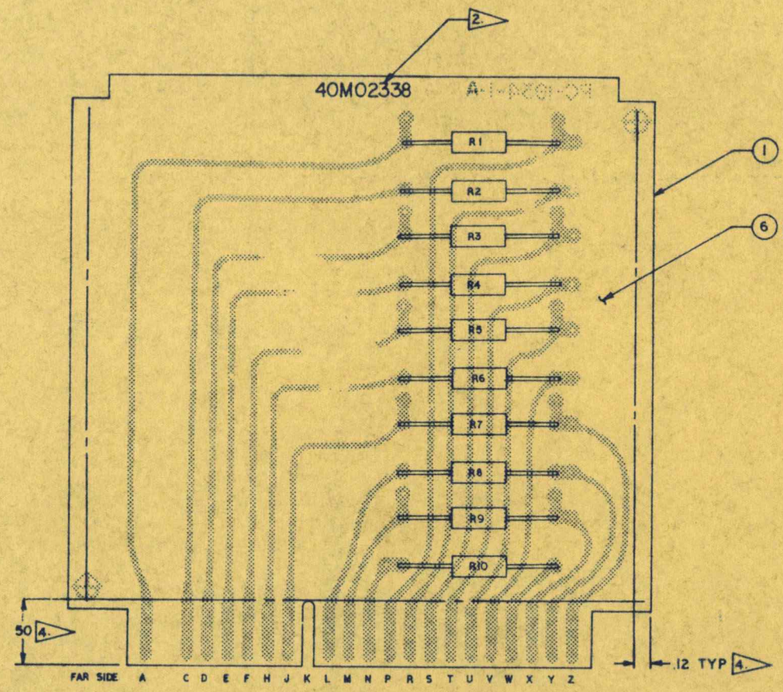
DWG SIZE D | 40M02338
SHEET 1 OF 2

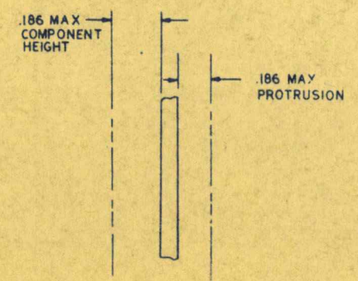
9P

V-FL FORM 429-3 (AUGUST 1960)

Notice — When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

PART No.	M F	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
			REDRAWN WITHOUT CHANGE	3-8-66	GMT/AH
		A	INC EO 5P-63	3-8-66	CH/AH
		B	INC EO 9P-503	3-22-66	





PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC 200-4 OR MSFC-PROC-22a
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.

40M02338
B

X00.30.00.00
I00.80.00.00
P9X
DISTR CODE

PL-ISSUED

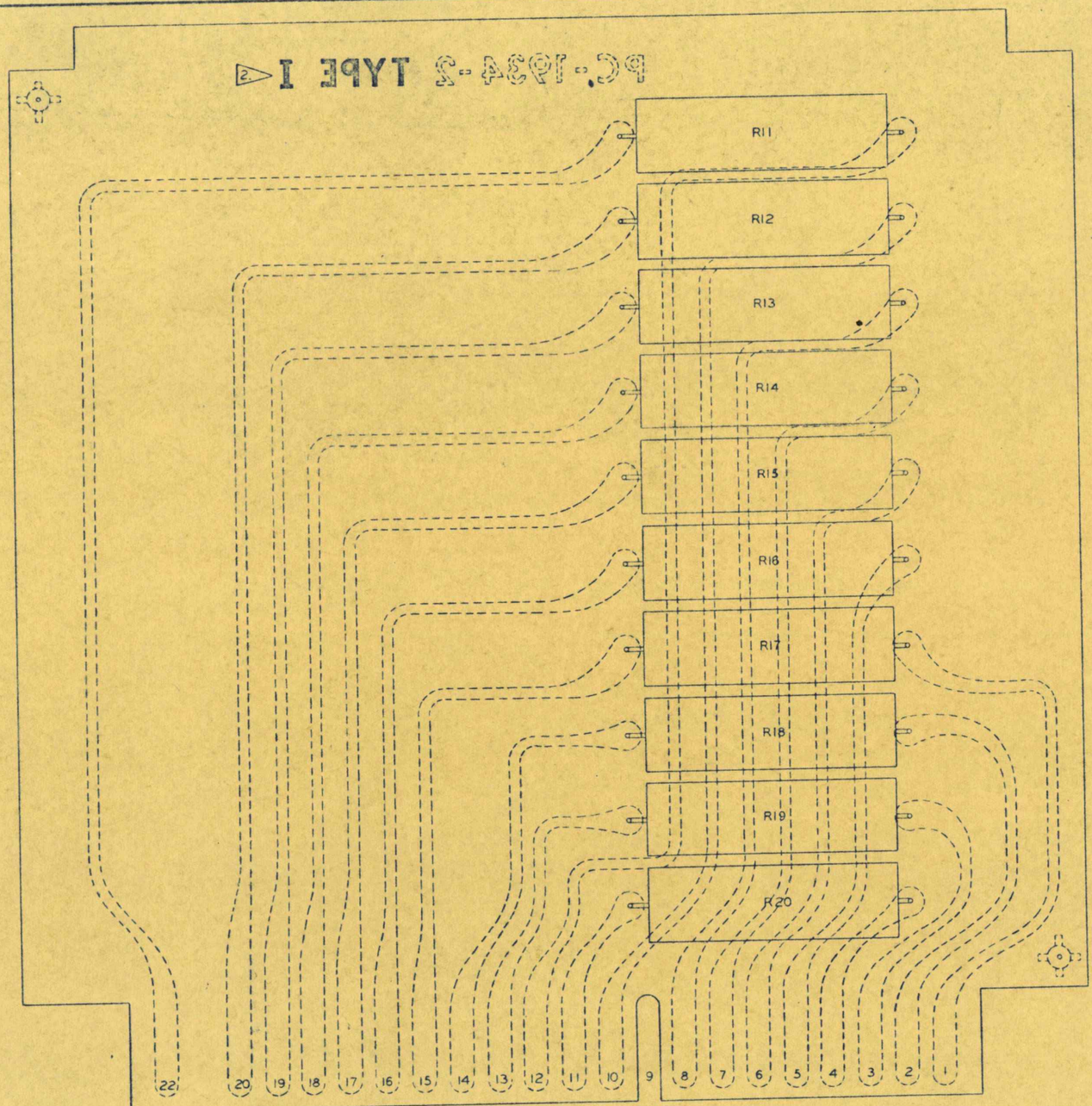
SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN TOLERANCES ON FRACTIONS; DECIMALS .XX ±.03; ANGLES	ORIGINAL DATE OF DRAWING FEB 8, 1963	ASSEMBLY, PC-1934-A TYPE I	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
	SATURN	MATERIAL	SMITHERMAN CHECKED AAK; PLL STRESS; ENGINEER BNA GOODHUE		
NEXT ASSY	USED ON	HEAT TREATMENT	SUBMITTED W.H. GOODHUE		DWG SIZE D; 40M02338
APPLICATION		FINAL PROTECTIVE FINISH 3.	APPROVED DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE 2/1; UNIT WEIGHT	SHEET 1 OF 3

9P

Change Date
26 June 1967

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT DOES NOT THEREBY INCUR ANY RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	REF	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
			REDRAWN WITHOUT CHANGE	1-4-66	



NOTES:
1. SEE SHEET NO. 1.

40M02338

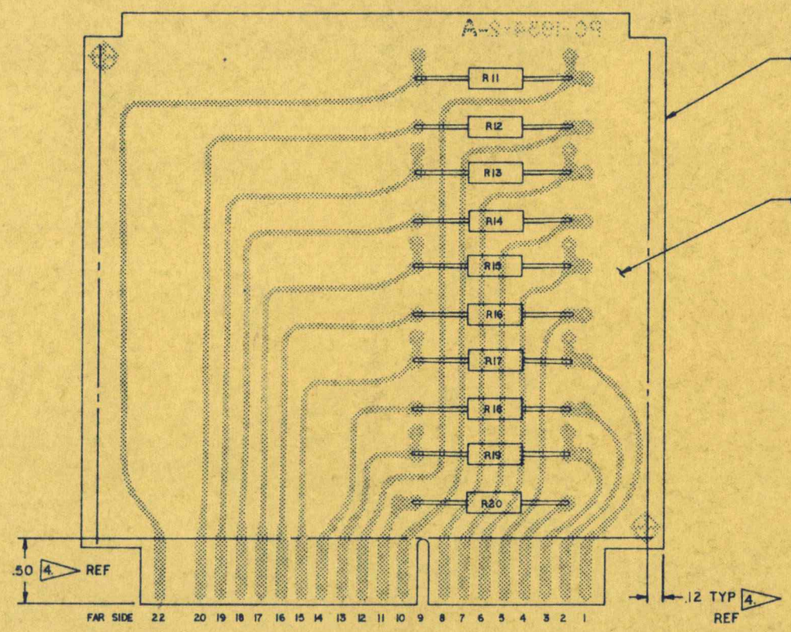
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING FEB 8, 63; DRAWN GUNTERMAN; CHECKED A.A.K.; CHECKER P.L.L.; ENGINEER B.N.A.; ENG. GOODHUE; SUBMITTED W.H. GOODHUE; APPROVED; DIRECTOR	ASSEMBLY, PC-1934 TYPE I SATURN C1 BLOCK II
NEXT ASSY / USED ON / APPLICATION		WEIGHT CHECKER; DATE; CODE; SCALE 4/1; UNIT WEIGHT	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA; DWG SIZE D; 40M02338; SHEET 2 OF 2

SP-63
7145
P9X
9P

MSFC FORM 482 B (AUGUST 1960)

Notice — When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

PART No.	N°	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
				REDRAWN WITHOUT CHANGE	3-8-66	F.W.
			A	SHEET 1		
			B	SHEET 1		



40M02338

B

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING: FEB 8, 1963	ASSEMBLY, PC-1934-A TYPE I	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE ALABAMA	
	MATERIAL	DRAWN: SMITHERMAN	CHECKED: AAK		
	HEAT TREATMENT	ENGINEER: PLL	STRESS:		
SATURN	FINAL PROTECTIVE FINISH	SUBMITTED: BNA	DRAFT: GOODHUE		DWG SIZE D — 40M02338
NEXT ASSY / USED ON		APPROVED: W.H. GOODHUE	WEIGHT CHECKED / DATE / CODE		SHEET 2 OF
APPLICATION		DIRECTOR	SCALE 2/1 — UNIT WEIGHT		

9P

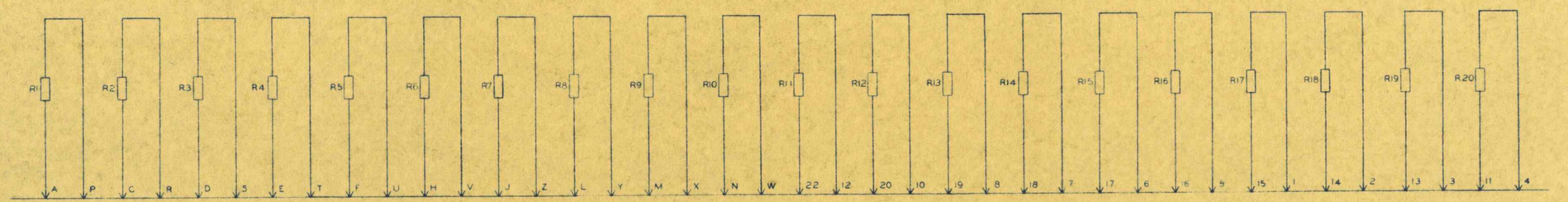
Change Date
26 June 1967

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA, IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE IN ANY MANNER WHATSOEVER AS CONFERRING ANY LICENSE OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

NSFC FORM 452-5 (AUGUST 1960)

PART No.	W.F.	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	SEE SHEET 1		
		B	SEE SHEET 1		

UNLESS OTHERWISE SPECIFIED:
RESISTORS ARE 560 Ω.
RESISTORS ARE ±5%.
RESISTORS ARE 1/2 W.



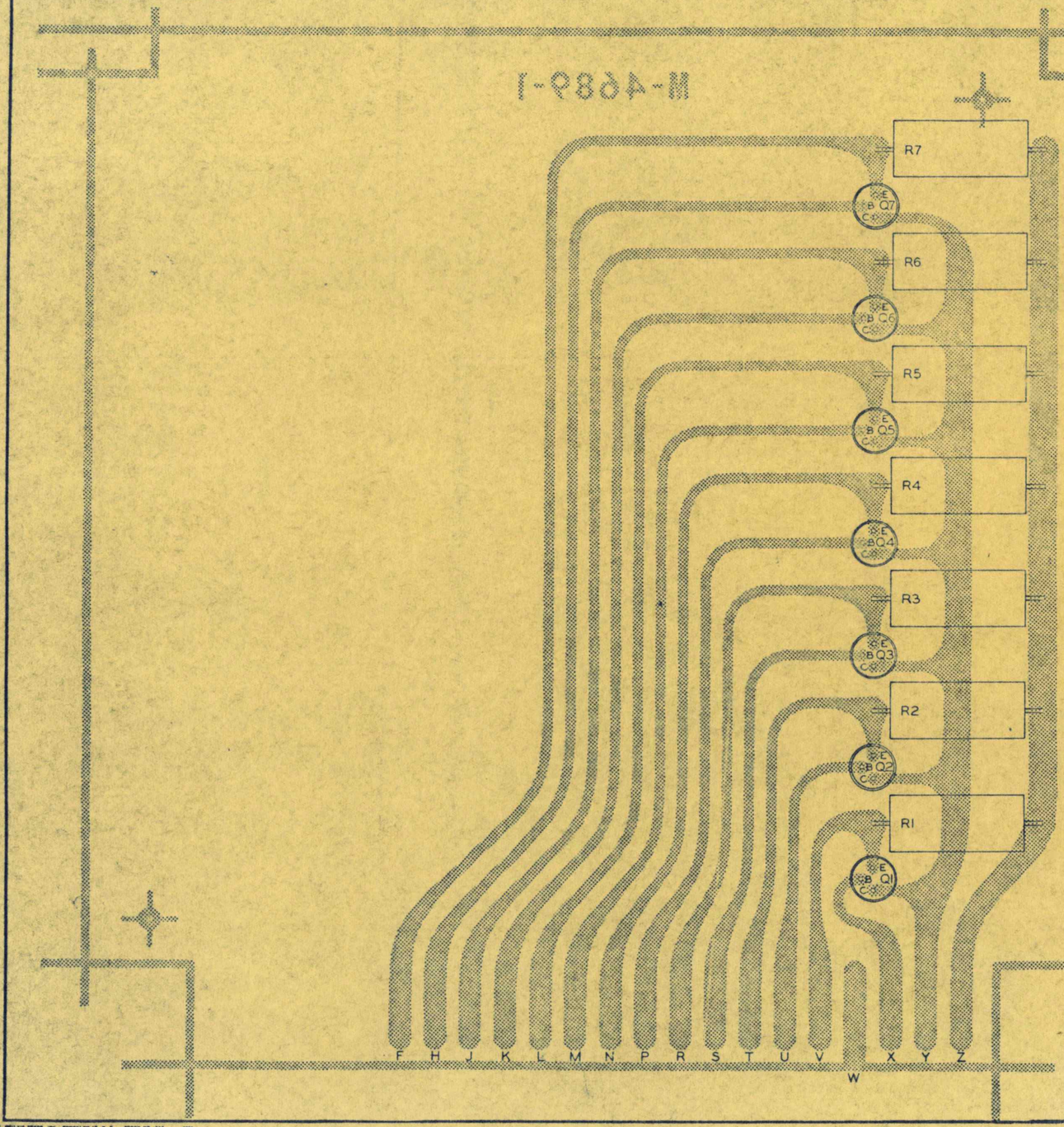
40M02338
B

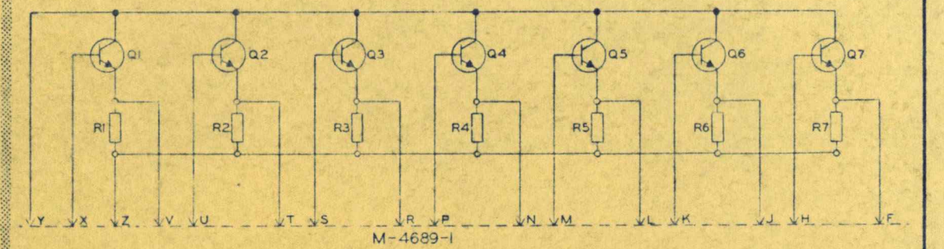
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING FEB 8, 1963; SMITHERMAN, CHECKED AAK; APPROVED P.L.L.; STRESS; DESIGNED B.N.A.; DRAWN GOODHUE; SUBMITTED W.H. GOODHUE; APPROVED; DIRECTOR	ASSEMBLY, PC-1934 TYPE I	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
NEXT ASSY / USED ON; APPLICATION			WEIGHT CHECKER; DATE; CODE; SCALE; UNIT WEIGHT	DWG SIZE D	40M02338
				SHEET 3 OF 3	

Change Date
26 June 1967

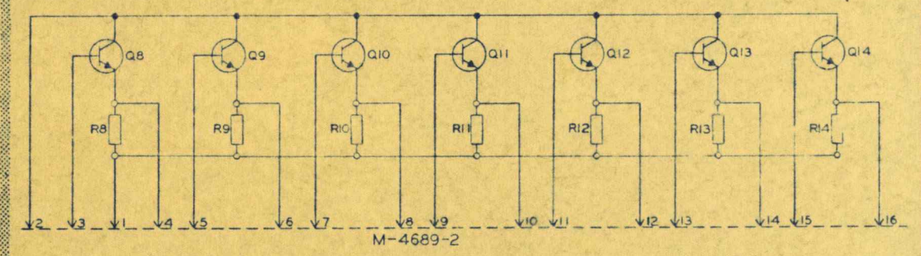
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA, IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.		REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL	
		A	INC ECO H D 726 & CHG NOTES	3-1-65		





M-4689-1



M-4689-2

NOTES-

1- PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-158.

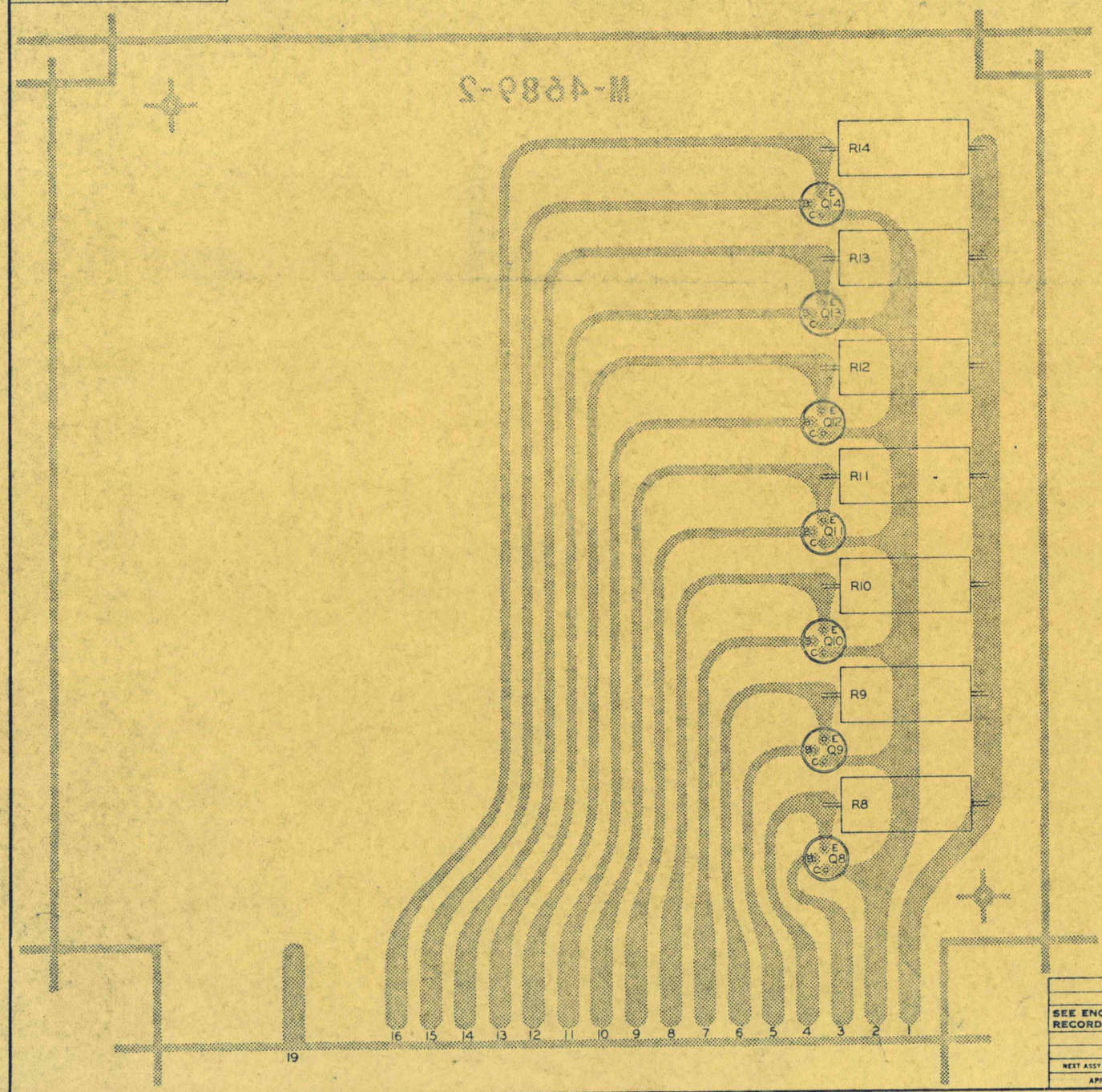
2- CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293, EXCEPT CONTACT AREA MUST BE KEPT FREE OF COATING MATERIAL. COATING TO BE APPLIED BY SPRAY PROCESS.

DESCRIPTION	COMP NO.	MFG. PT. NO.	NO. REQD.	MFGR.	MIL-TYPE
RESISTOR - 20K, 1/2W 1%	R1 THRU R14		14		RN65C
TRANSISTOR - 2N956	Q1 THRU Q14		14	FAIRCHILD	

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS DECIMALS ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING 6-10-63; DRAFTSMAN CHECKED; CHECKED STRESS; ENGINEER SUBMITTED; APPROVED DIRECTOR	ASSEMBLY, M-4689 E.S.T. DECODER & READOUT EMITTER FOLLOWER STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
NEXT ASSY USED ON APPLICATION			WEIGHT CHECKED DATE CODE; SCALE 4/1 UNIT WEIGHT	DWG SIZE D 40M02700	SHEET 1 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY OR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	W/	REVISIONS				
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL
			A	SEE SHEET 1	3-1-65	

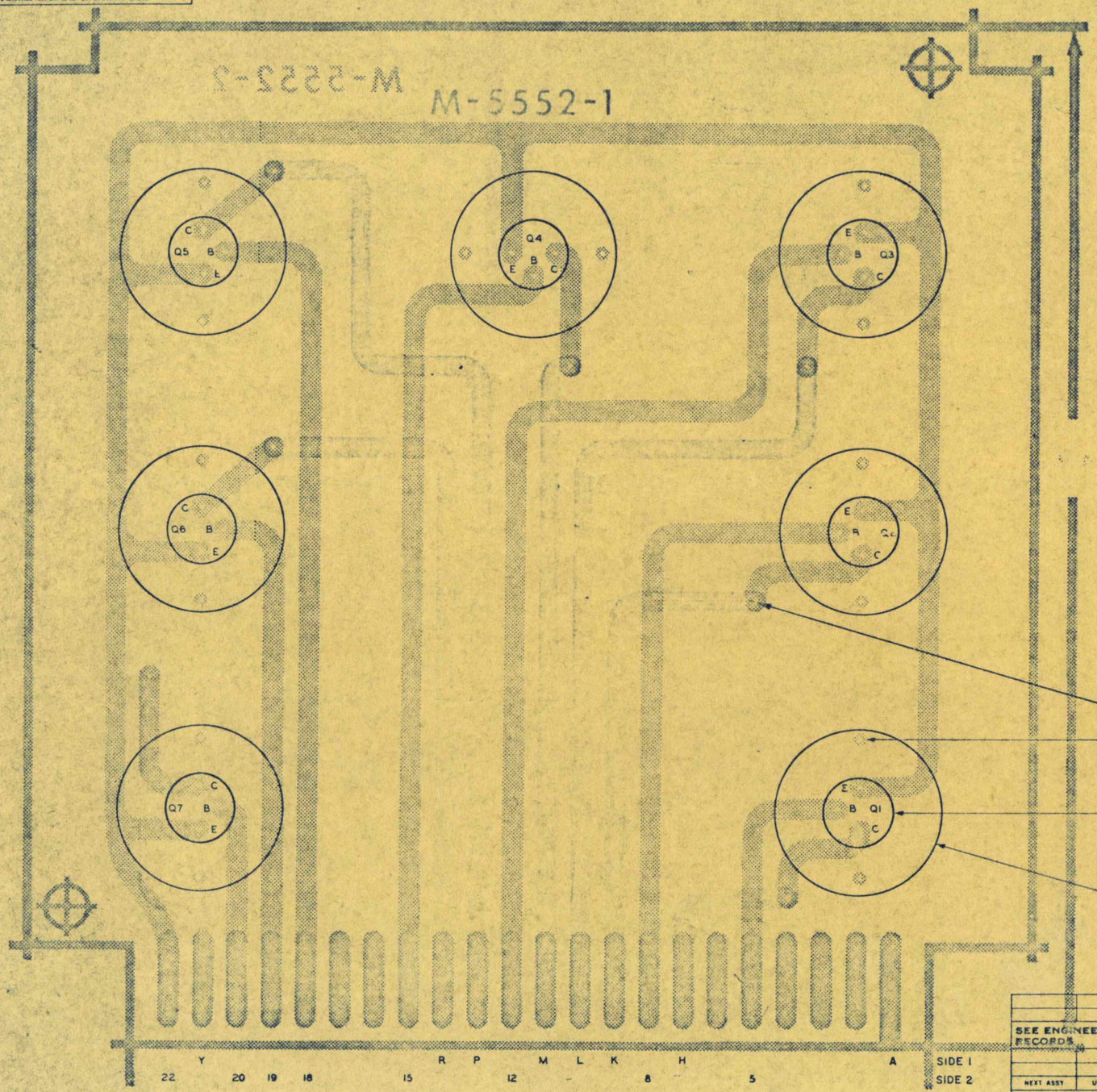


SEE SHEET NO. 1 FOR PARTS LIST, SCHEMATIC & NOTES.

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING 6-10-63	ASSEMBLY, M-4689 E.S.T. DECODER & READOUT EMITTER FOLLOWER STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	CHECKED STRESS SUBMITTED	WEIGHT CHECKED DATE CODE	DWG SIZE D 40M02700
		MATERIAL	APPROVED	SCALE 4/1 UNIT WEIGHT	SHEET 2 OF 2
NEXT ASSY USED ON		HEAT TREATMENT			
APPLICATION		FINAL PROTECTIVE FINISH	DIRECTOR		

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FURNISHED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



GENERAL NOTES:
UNLESS OTHERWISE SPECIFIED.

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC 200 OR MSFC-PROC-224.
2. MARK PER MSFC-STD-383.
3. CONFORMAL

4. SCREW-FILISTER HEAD 2-56X3/16 (14 REQ'D)
   TRANSISTOR-2N2881 (7 REQ'D)
   HEAT SINK-2215B (7 REQ'D)

SEE ENGINEERING RECORDS

NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS | DECIMALS | ANGLES
MATERIAL
HEAT TREATMENT
FINAL PROTECTIVE FINISH 3

ORIGINAL DATE OF DRAWING FEB 5, 1964
DRAFTSMAN GGH
APPROVED
SUBMITTED
DIRECTOR

ASSEMBLY, M-5552 READOUT DRIVER SATURN

WEIGHT CHECKED | DATE | CODE
SCALE 4/1 | UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE ALABAMA

DWG SIZE D | 40M03929
SHEET 1 OF 1

V 12.31
P5D
DATA CODE

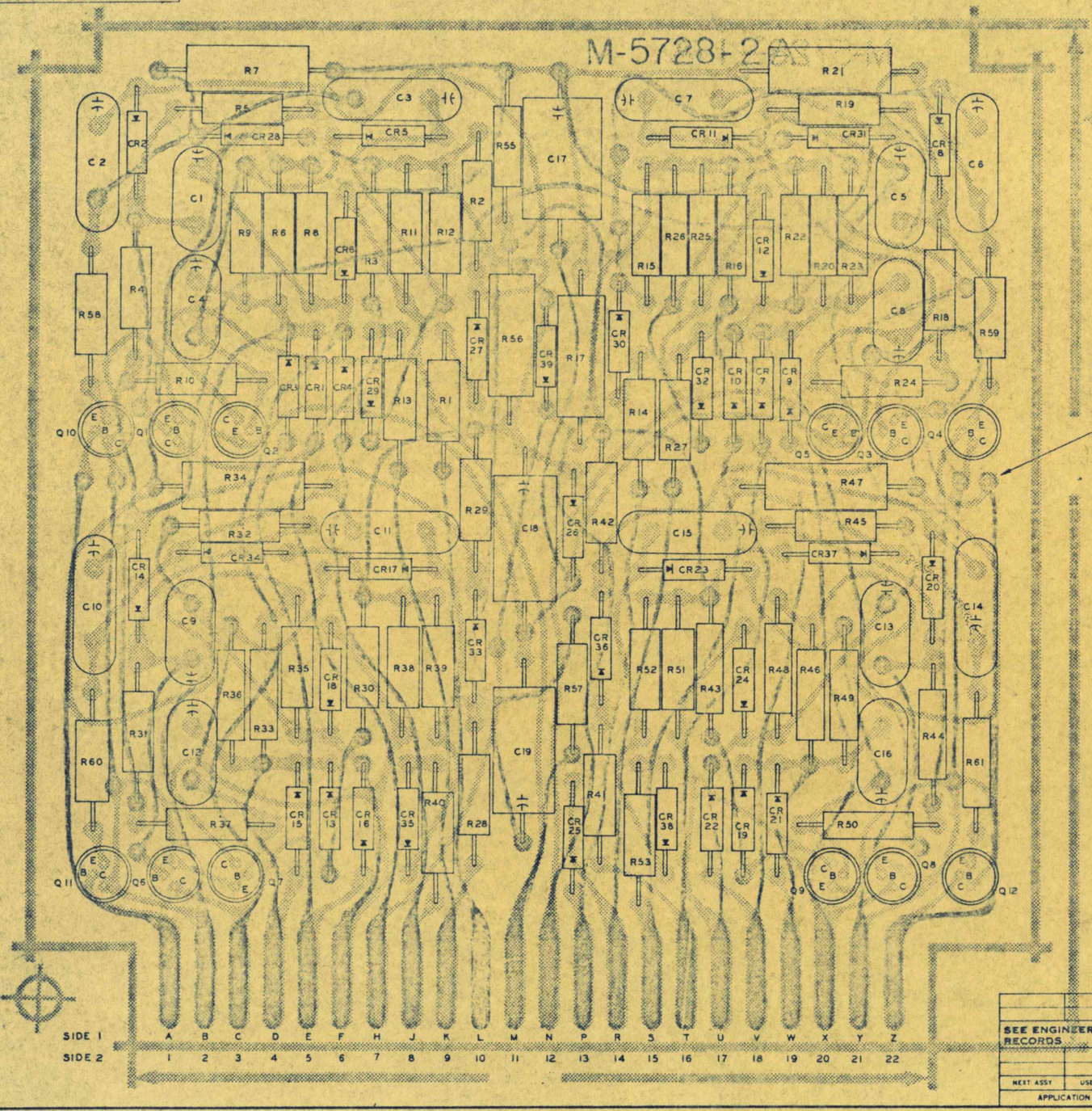
5P

MSFC FORM 482-3 (AUGUST 1961)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	W.F.	REVISIONS			
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL
			A	GENERAL REVISION	7-8-64	[illegible]

M-5728-2



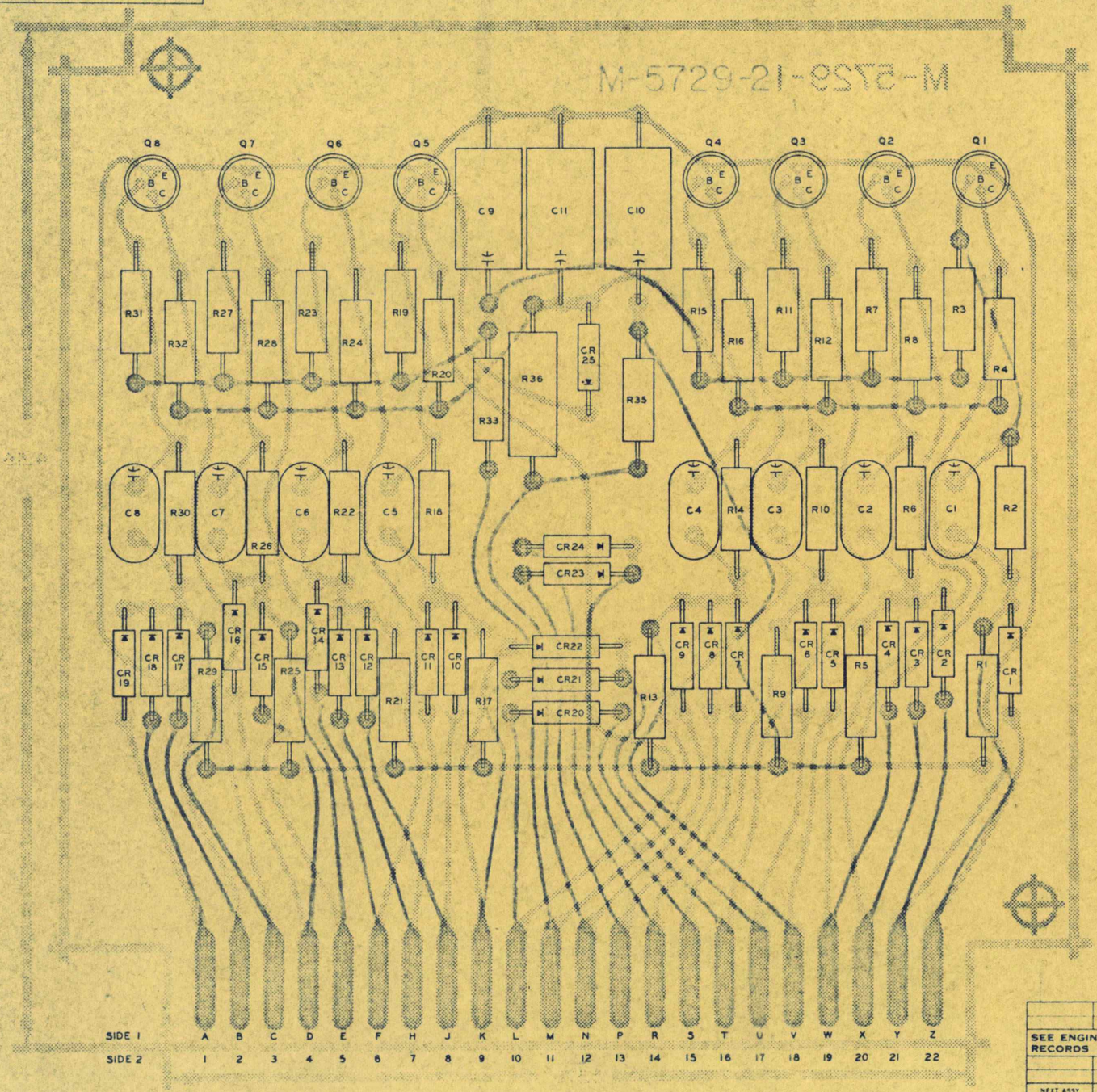
GENERAL NOTES:
UNLESS OTHERWISE SPECIFIED.

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-158.
2. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293, EXCEPT CONTACT AREA MUST BE KEPT FREE OF COATING MATERIAL. COATING TO BE APPLIED BY SPRAY PROCESS.
3. REFERENCE DRAWING: DRILLING & TRIMMING 40M04226. SCHEMATIC 40M04228.
4. SOLDER JUMPERS AND COMPONENT LEADS ON BOTH SIDES OF BOARD WHERE APPLICABLE.
5. JUMPERS TO BE NO. 20 AWG SOLID COPPER WIRE.

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH 2	ORIGINAL DATE OF DRAWING APR 7 1964; DRAFTSMAN FRS; CHECKER; ENGINEER; SUBMITTED; APPROVED; DIRECTOR	ASSEMBLY, M-5728-A FLIP-FLOP 7 SATURN	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
NEXT ASSY / USED ON APPLICATION			WEIGHT CHECKER; DATE; CODE; SCALE 4/1; UNIT WEIGHT	DWG SIZE D	40M04227
				SHEET 1 OF 1	

M-5729-21-9STS-M

PART NO.	BY	REVISIONS				
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL



GENERAL NOTES:
UNLESS OTHERWISE SPECIFIED.

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER M5FC-PROC-158.
2. CONFORMAL COAT BOTH SIDES OF BOARD PER M5FC-PROC-293, EXCEPT CONTACT AREA MUST BE KEPT FREE OF COATING MATERIAL. COATING TO BE APPLIED BY SPRAY PROCESS.
3. REFERENCE DRAWING: DRILLING & TRIMMING 40M04230. SCHEMATIC 40M04232.
4. SOLDER COMPONENT LEADS ON BOTH SIDES OF BOARD WHERE APPLICABLE.

SEE ENGINEERING RECORDS

NEXT ASSY | USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS .XX DECS ANGLES
MATERIAL
HEAT TREATMENT
FINISH 2

ORIGINAL DATE OF DRAWING APR 10 1964
DRAFTSMAN FRS
CHECKED AP
ENG APP ENG
SUBMITTED
APPROVED
DIRECTOR

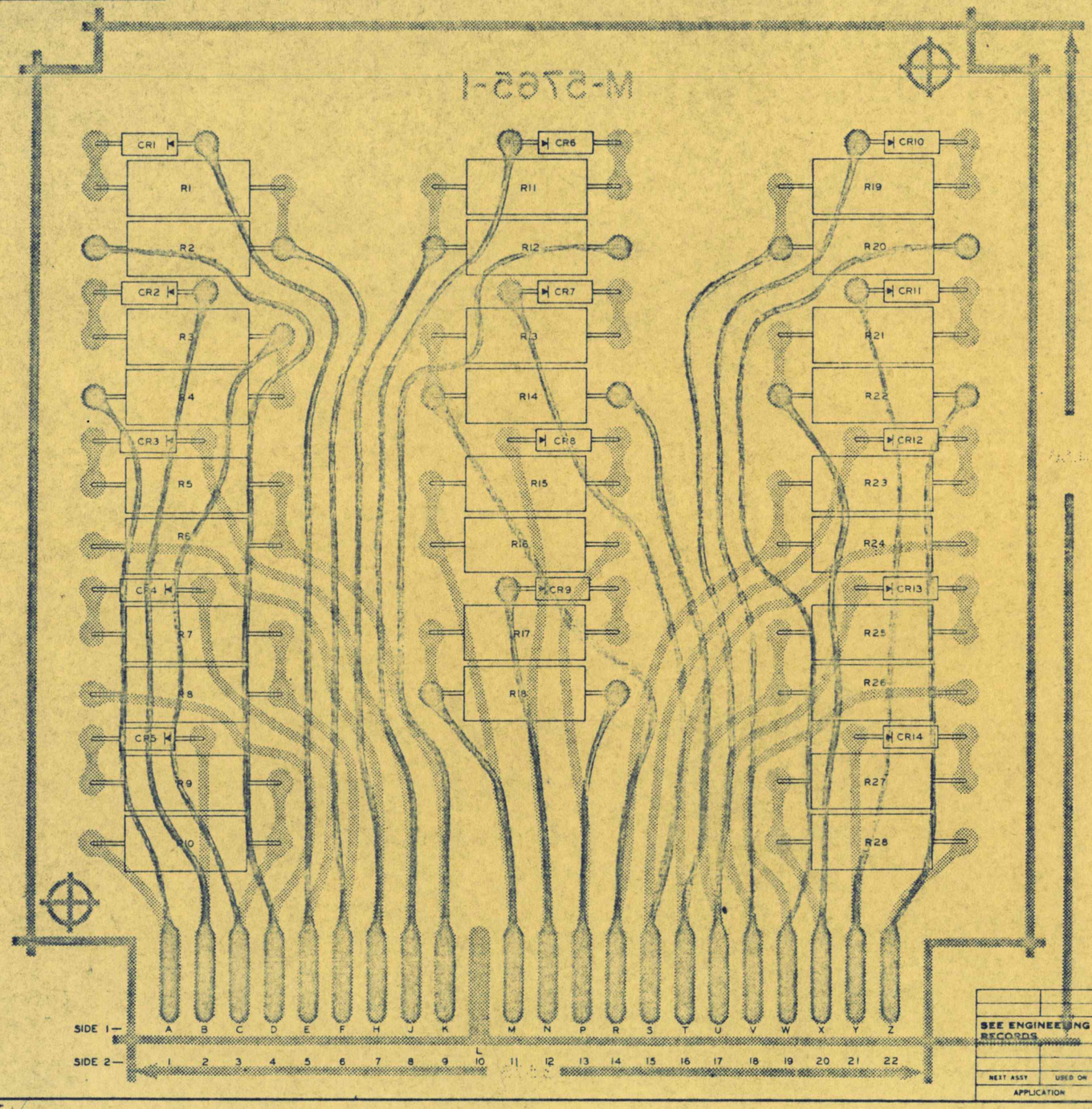
ASSEMBLY, M-5729
GATE 6
SATURN

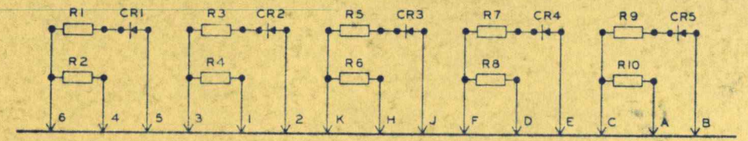
WEIGHT CHECKED | DATE | CODE
SCALE 4/1 | UNIT WEIGHT | SHEET 1 OF 1

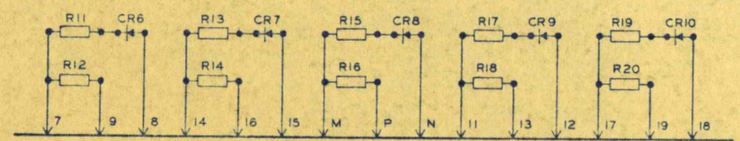
GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE ALABAMA
DWG SIZE D | 40M04231

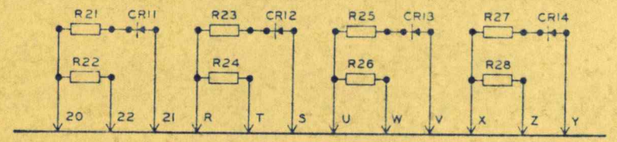
NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FURNISHED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	MF	REVISIONS				
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL
			A	GEN. REV	3-1-65	







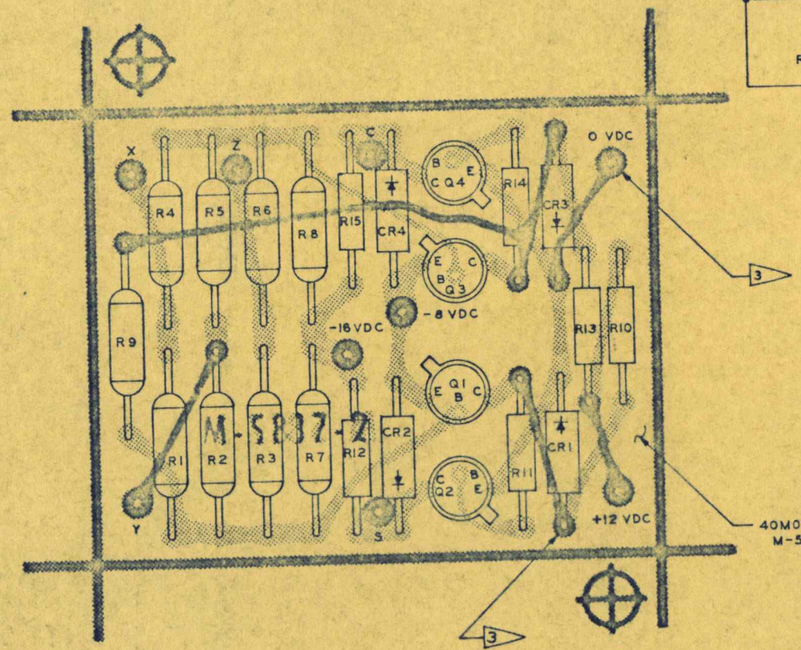


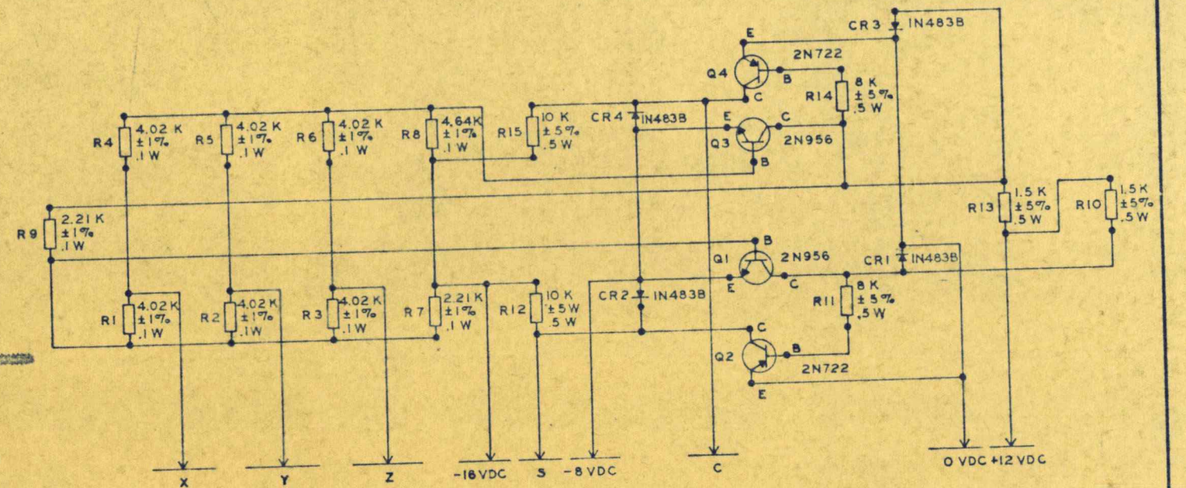
GENERAL NOTES: UNLESS OTHERWISE SPECIFIED.

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER M5FC-PROC-158.
2. CONFORMAL COAT BOTH SIDES OF BOARD PER M5FC-PROC-293, EXCEPT CONTACT AREA MUST BE KEPT FREE OF COATING MATERIAL. COATING TO BE APPLIED BY SPRAY PROCESS.
3. REFERENCE DRAWING: DRILLING & TRIMMING 40M04523.
4. SOLDER COMPONENT LEADS ON BOTH SIDES OF BOARD WHERE APPLICABLE.
5. R1, R3, R5, R7, R9, R11, R13, R15, R17, R19, R21, R23, R25, R27 ARE 51Ω, 3W, ±5%. R2, R4, R6, R8, R10, R12, R14, R16, R18, R20, R22, R24, R26, R28, ARE 750Ω, 3W, ±5%. ALL DIODES ARE IN483B.

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING MAY 18 1964	ASSEMBLY, M-5765 READOUT DRIVER BIAS STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
NEXT ASSY / USED ON	MATERIAL	APPROVED	WEIGHT / CHECKER / DATE / CODE	DWG SIZE D	40M04524
APPLICATION	HEAT TREATMENT	SUBMITTED	SCALE 4/1	UNIT WEIGHT	SHEET 1 OF 1
	FINAL PROTECTIVE FINISH 2	DIRECTOR			

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL



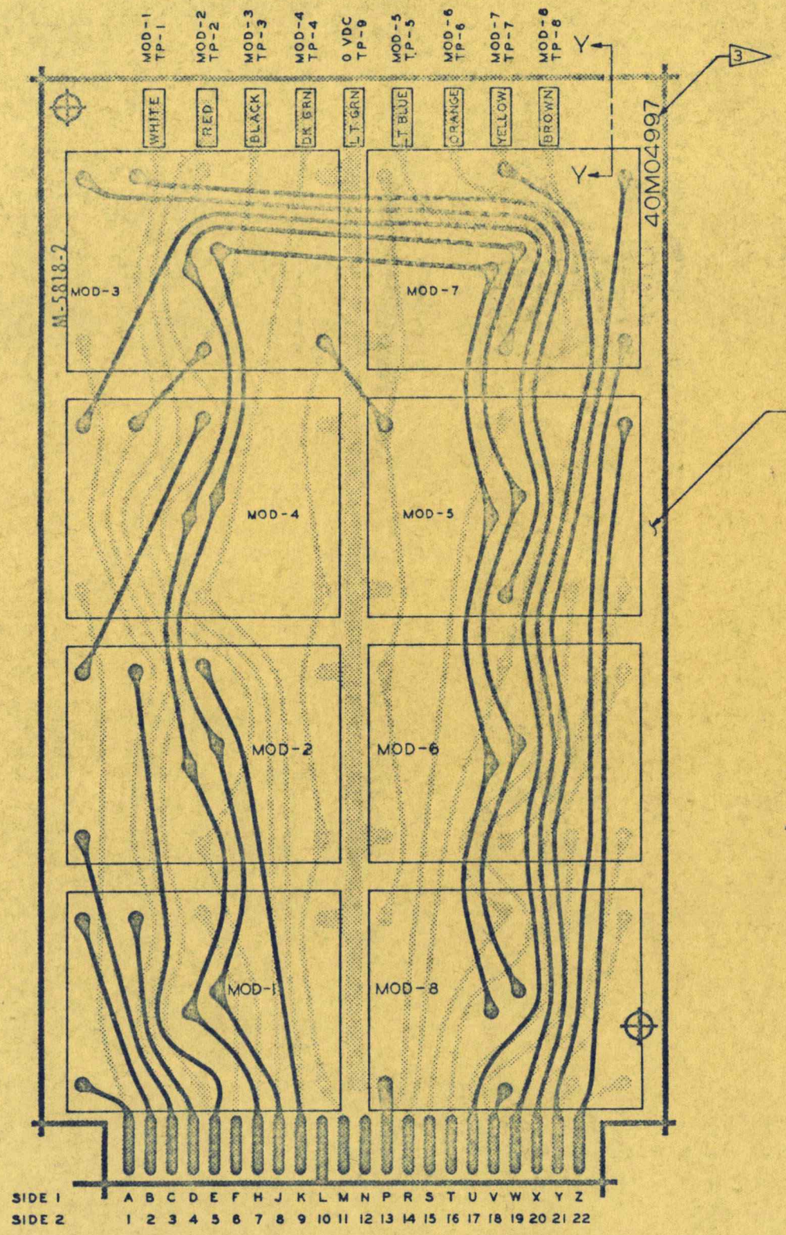


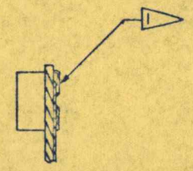
NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-158.
2. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293, EXCEPT CONTACT AREA MUST BE KEPT FREE OF COATING MATERIAL. COATING TO BE APPLIED BY SPRAY PROCESS.
3. SOLDER PINS AND COMPONENT LEADS ON BOTH SIDES OF BOARD WHERE APPLICABLE.

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE AUG 12, 1964	ASSEMBLY, M-5817 FULL BINARY ADDER MODULE STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON	MATERIAL / HEAT TREATMENT / FINISH	APPROVED	WEIGHT: NET / UNIT WEIGHT	SIZE D — 40M04994
APPLICATION			SCALE 4/1	SHEET 1 OF 1

PART NO.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	E.O. IP-252 CANCELLED	6/27/65	





SECTION Y-Y
TYP 9 PLACES

40M04996
(M-5818)

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-158.
2. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293, EXCEPT CONTACT AREA MUST BE KEPT FREE OF COATING MATERIAL. COATING TO BE APPLIED BY SPRAY PROCESS.
3. STAMP PER MSFC-STD-383.

P/D

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING AUG 26 1964	ASSEMBLY, M-5818 FULL BINARY ADDER BASEBOARD STANDARD
NEXT ASSY. USED ON	MATERIAL	SUBMITTED	
APPLICATION	HEAT TREATMENT	APPROVED	
	FINAL PROTECTIVE FINISH	DIRECTOR	

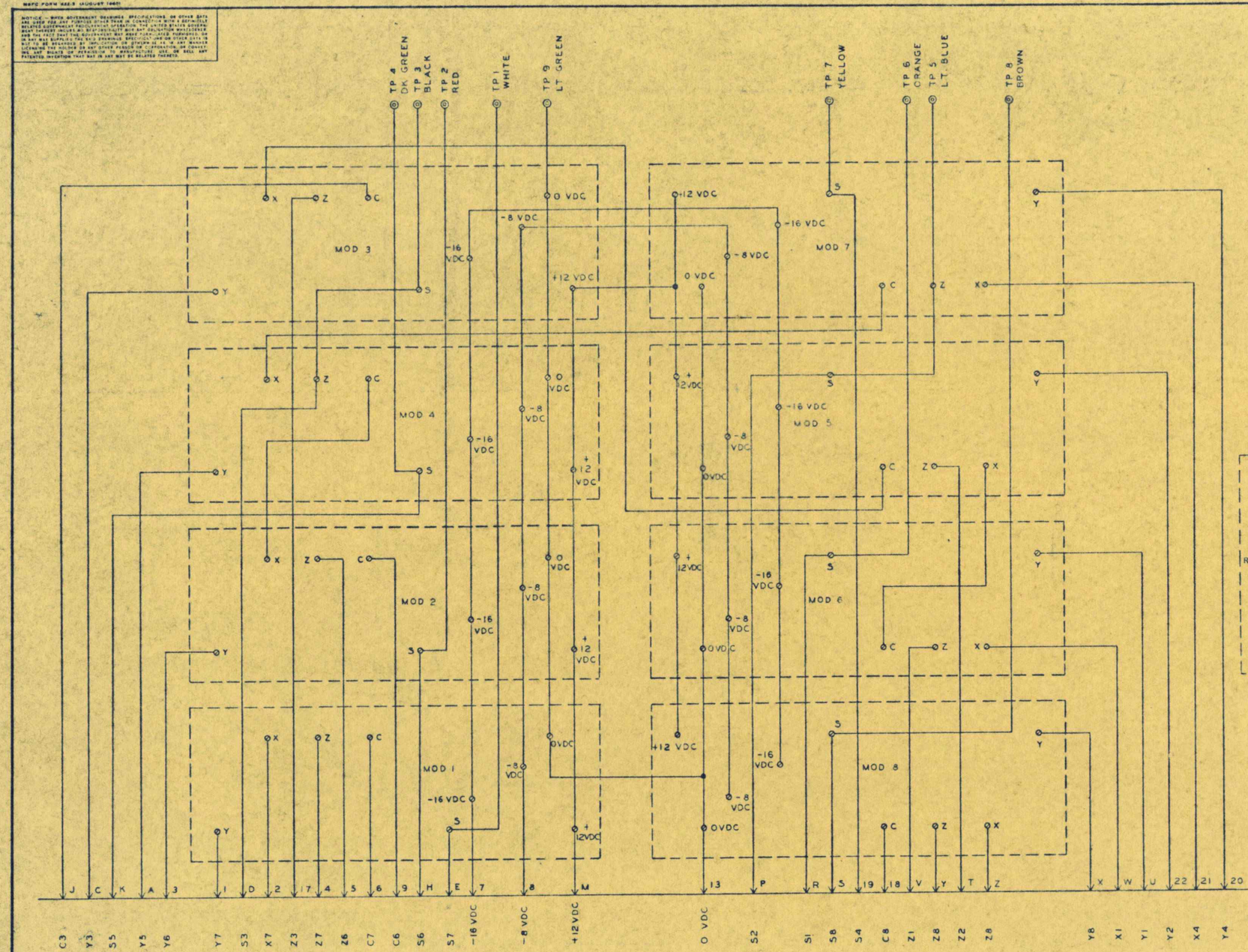
GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

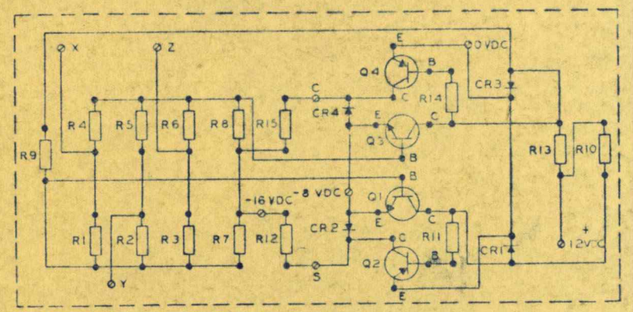
DWG SIZE D — 40M04997

SCALE 2/1 — SHEET 1 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	M*	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL

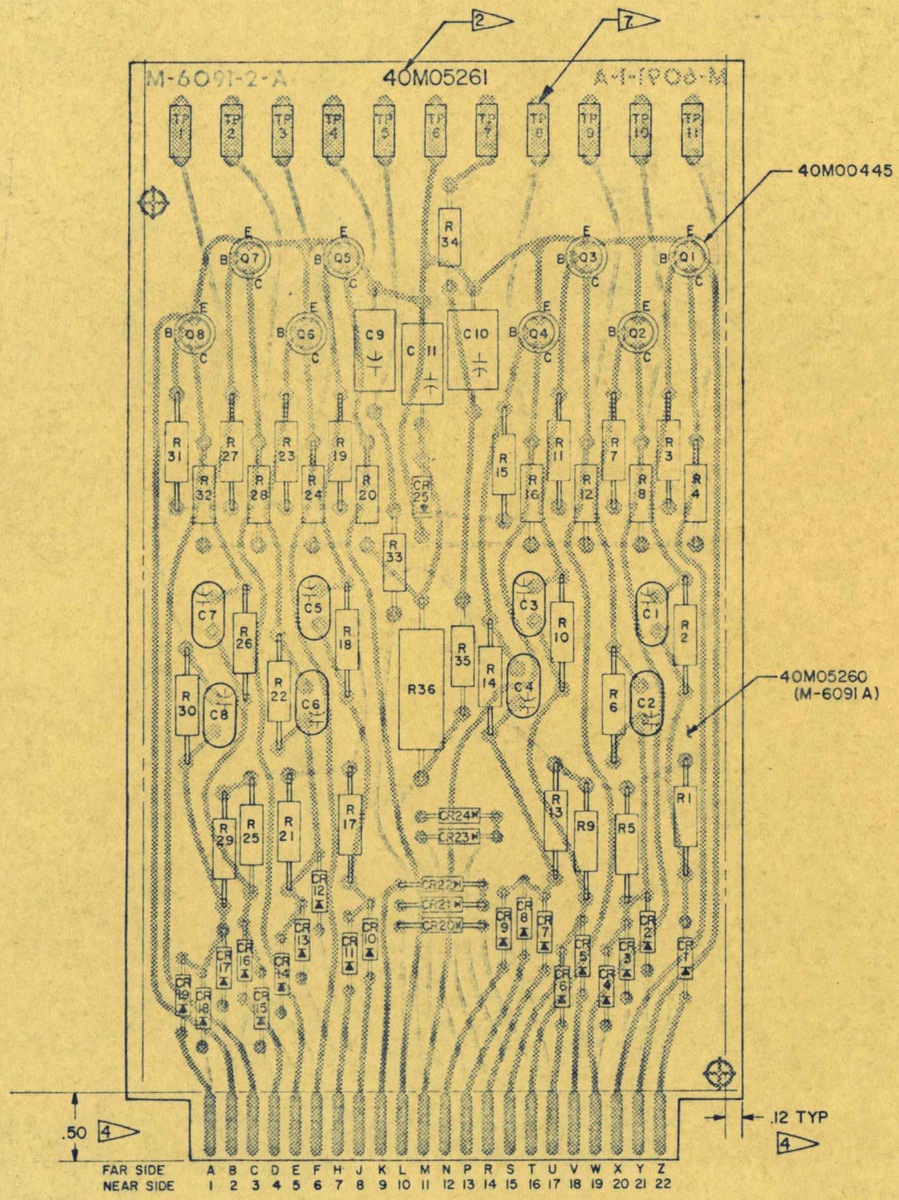

TP 4 DK GREEN
TP 3 BLACK
TP 2 RED
TP 1 WHITE
TP 9 LT GREEN
TP 7 YELLOW
TP 6 ORANGE
TP 5 LT BLUE
TP 8 BROWN
MOD 1
MOD 2
MOD 3
MOD 4
MOD 5
MOD 6
MOD 7
MOD 8
0 VDC
-8 VDC
-16 VDC
+12 VDC
C3 Y3 S5 Y5 Y6 Y7 S3 X7 Z3 Z7 Z6 C7 C6 S6 S7 -16 VDC -8 VDC +12 VDC 0 VDC S2 S1 S8 S4 C8 Z1 Z8 Z2 Z8 Y8 X1 Y1 Y2 X4 Y4

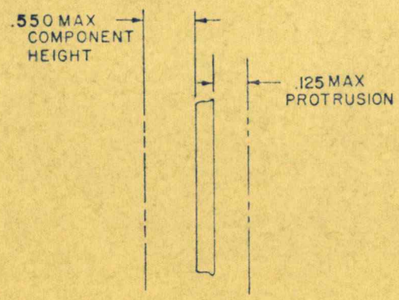


FULL BINARY ADDER MODULE M-5817
40M04994
TYPICAL 8 PLACES MOD 1 – MOD 8

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING AUG 8, 1964	ASSEMBLY, M-5818 FULL BINARY ADDER BASEBOARD STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE ALABAMA	
NEXT ASSY / USED ON	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	DRAFTSMAN Teel; CHECKER; ENGINEER; SUBMITTED; APPROVED; DIRECTOR	WEIGHT; SCALE; CHECKER; STRESS; ENGINEER FH; DATE; CODE; UNIT WEIGHT	SIZE D	DWG NO. 40M04997
APPLICATION				SHEET 2 OF 2	

PART NO.	REVISIONS			
	ZONE SYM	DESCRIPTION	DATE	APPROVAL
	A	INCORP EO 5P-218 5P-70	9-21-65	





PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC200-4 OR MSFC-PROC-224.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD.
5. SECURE COMPONENTS (C1–C10) TO BOARD PER MSFC-PROC-257.
6. SOLDER COMPONENT LEADS ON BOTH SIDES OF THE BOARD WHERE APPLICABLE.
7. TEST JACKS SHALL BE FREE OF CONFORMAL COATING.
8. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATIONS PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.

40M05261

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING APR 19, 1965	ASSEMBLY, M-6091-A GATE STANDARD
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH 3	APPROVED; DIRECTOR	WEIGHT CHECKED / DATE / CODE; SCALE 2/1; UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

V-12.31 PID

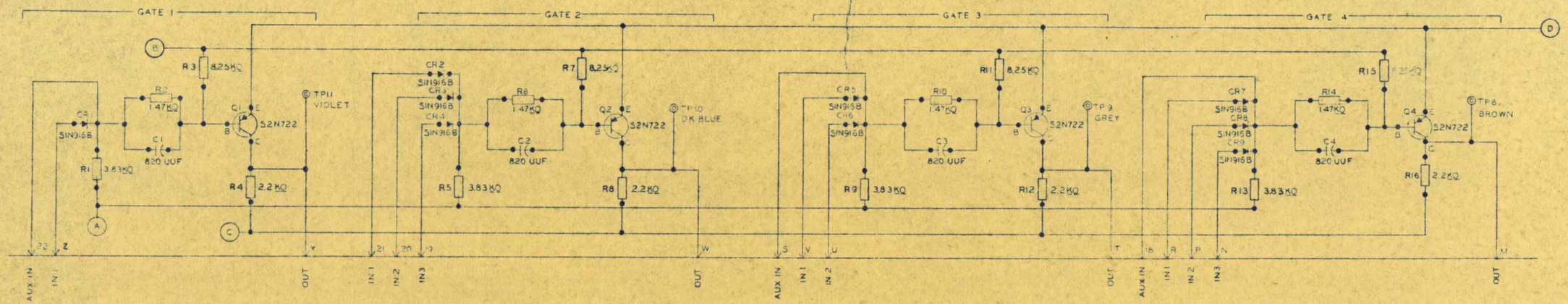
DWG SIZE D — 40M05261 — SHEET 1 OF 3

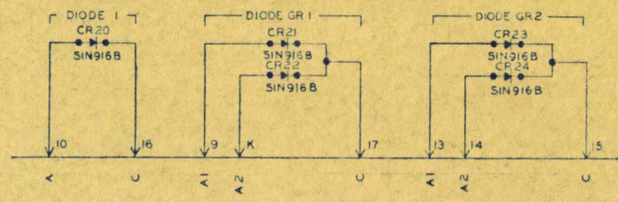
5/1/65 IP

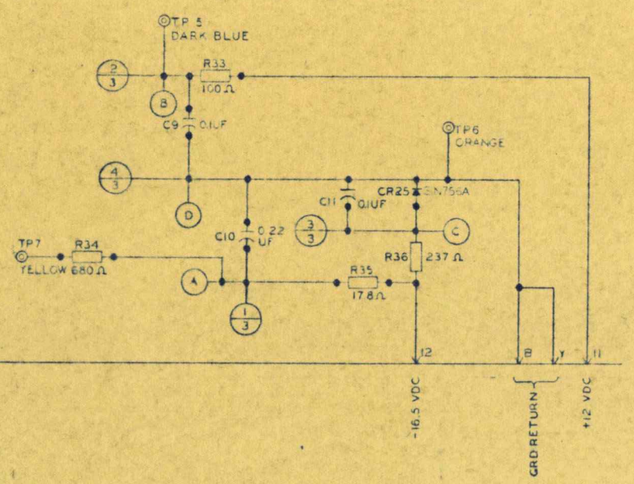
MSFC FORM 422-3 (AUGUST 1960)

NOTICE-WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	MFI	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	SEE SH. 1		







40M05261

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING FEB 17, 1965	ASSEMBLY, M-6091-A GATE STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKER ENGINEER		DWG SIZE D — 40M05261
NEXT ASSY	USED ON	MATERIAL	SUBMITTED		
APPLICATION		HEAT TREATMENT	APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE	SHEET 2 OF
		FINAL PROTECTIVE FINISH		SCALE UNIT WEIGHT	

X-12-31 P.D DIGITIZE CODE

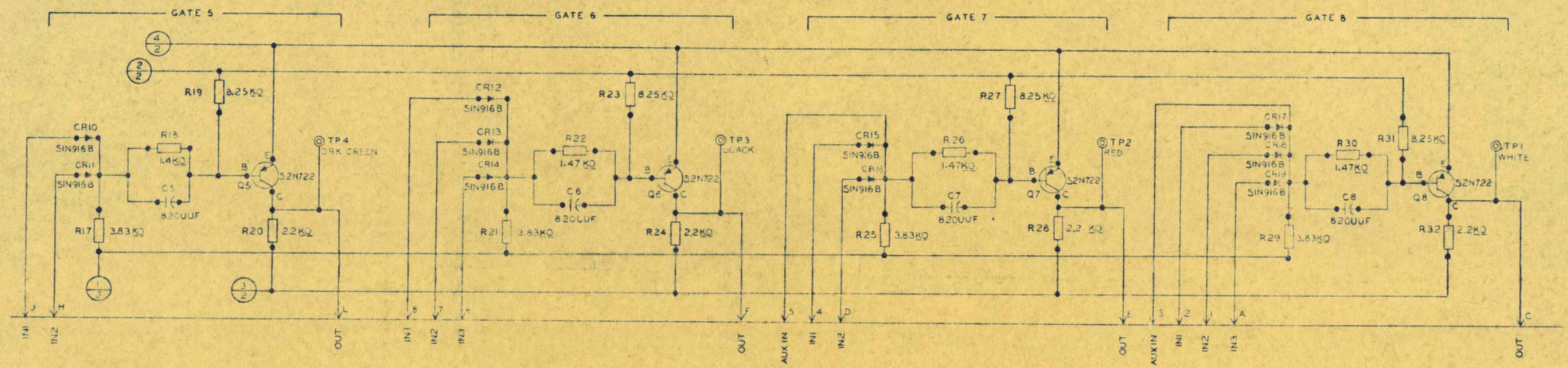
COPYMATION, INC. 181-7

5/9/65 IP

MSFC FORM 433-B (AUGUST 1960)

NOTICE- WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M05261

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING FEB 17, 1965	ASSEMBLY, M-6091-A GATE STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKED ENGINEER		
		MATERIAL	SUBMITTED		
		HEAT TREATMENT	APPROVED	WEIGHT CHECKER DATE CODE	DWG SIZE D 40M05261
NEXT ASSY	USED ON	FINAL PROTECTIVE FINISH	DIRECTOR	SCALE UNIT WEIGHT	SHEET 3 OF 5
APPLICATION					

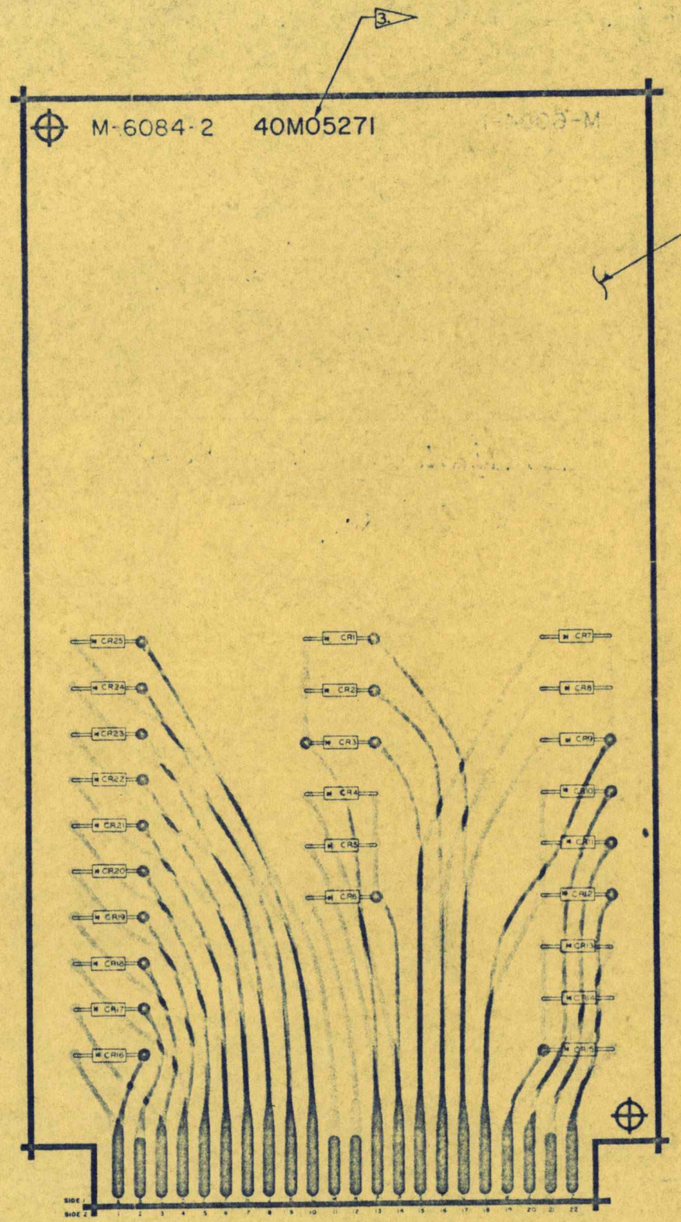
COPYMATION, INC., 1957

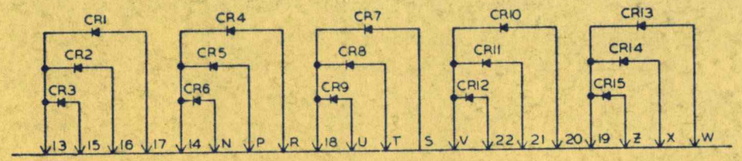
5/3/65 IP

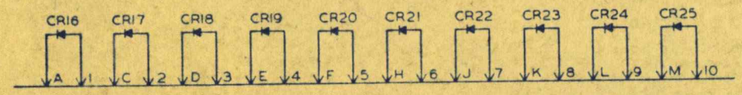
MSFC FORM 420-E (AUGUST 1966)

NOTICE—When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as, or in any manner licensing the holder or any other person or corporation or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

PART NO	NEXT ASSY	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-57	9-3-65	[illegible]







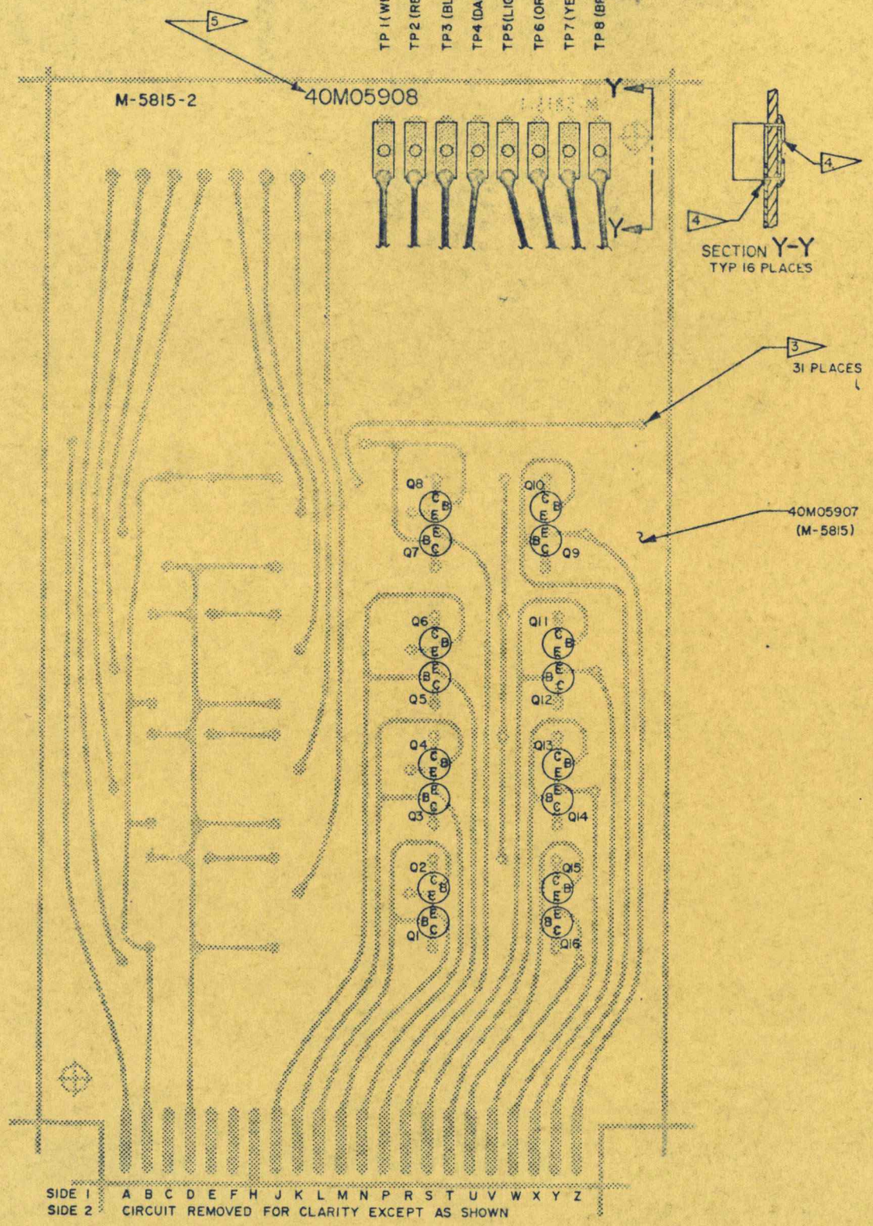
NOTES:
1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC200-4 OR MSFC-PROC-224.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-295.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION.

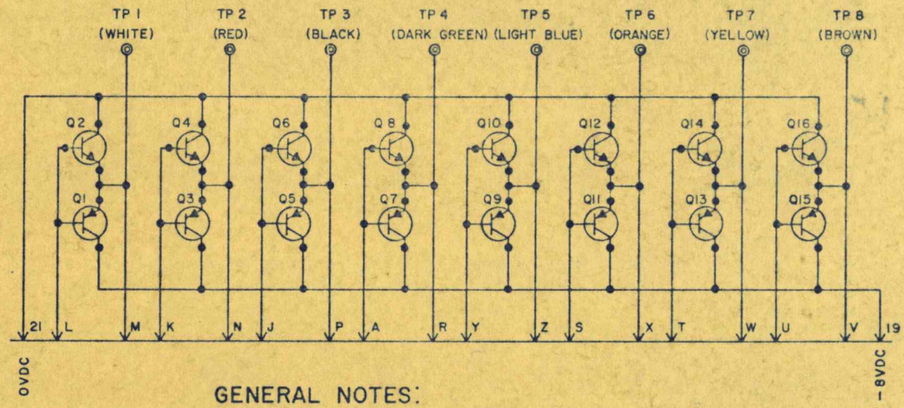
40M05271
A

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING SEP 29, 1964	ASSEMBLY, M-6084 8" DIODE 20 STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE ALABAMA	
NEXT ASSY / USED ON APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH 2	CHECKED; ENGINEER; SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKED; DATE; CODE; SCALE 2/1; UNIT WEIGHT	SIZE D	40M05271
				SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO	NEXT	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INCORP EO 5P-12	9-21-65	





GENERAL NOTES:

UNLESS OTHERWISE SPECIFIED

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-158.
2. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293, EXCEPT CONTACT AREA MUST BE KEPT FREE OF COATING MATERIAL.

3. JUMPER TO BE NO. 20 AWG SOLID COPPER WIRE PER QQ-W-343.
4. SOLDER COMPONENTS LEAD AND/OR JUMPER ON BOTH SIDES OF THE BOARD WHERE APPLICABLE.
5. STAMP PER MSFC-STD-383.
6. Q1, Q3, Q5, Q7, Q9, Q11, Q13, Q15, Q17, Q19, Q21, Q23, Q25, Q27, Q29, Q31 ARE 2N722.
   Q2, Q4, Q6, Q8, Q10, Q12, Q14, Q16, Q18, Q20, Q22, Q24, Q26, Q28, Q30, Q32 ARE 2N2501.

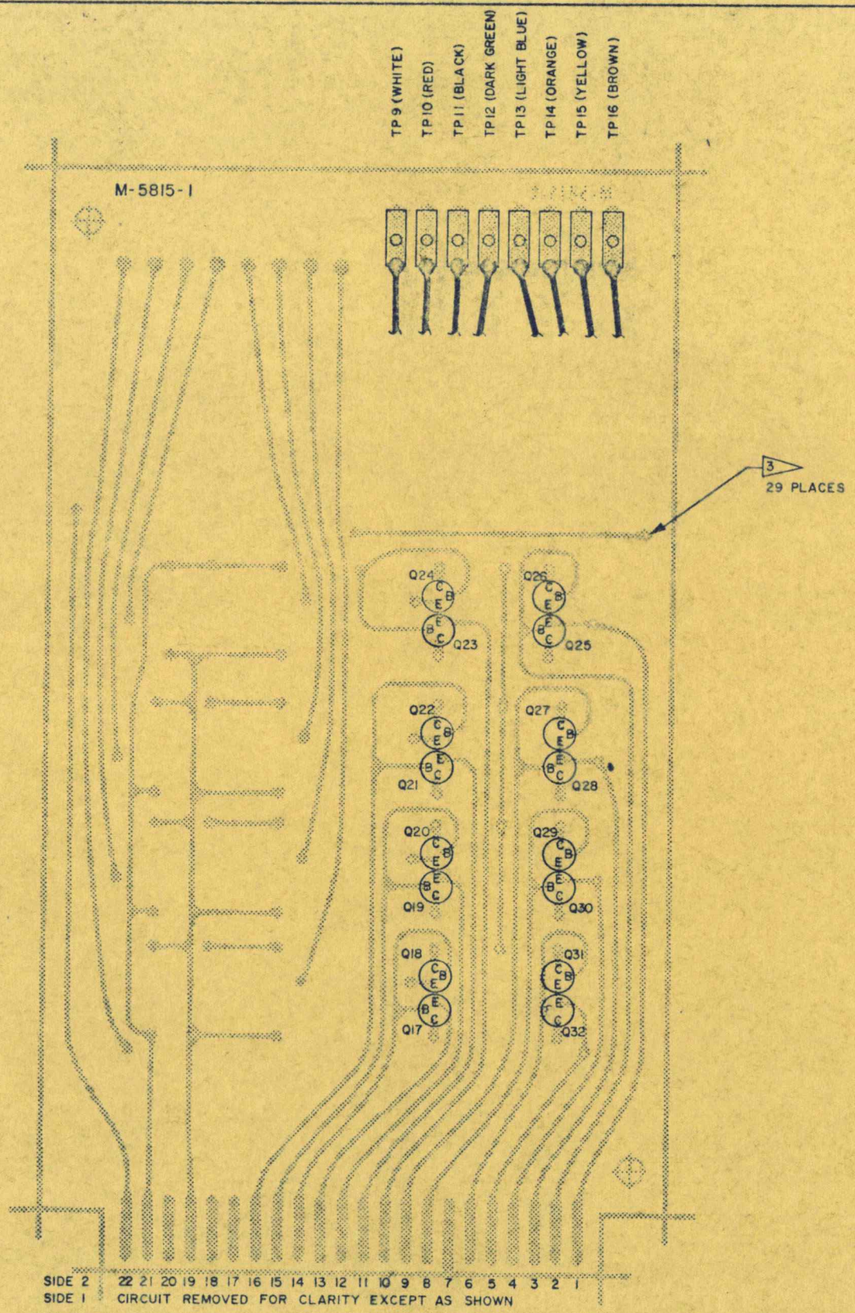
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING: AUG 25, 64	ASSEMBLY, M-5815 LINE DRIVER STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE ALABAMA
NEXT ASSY / USED ON	APPROVED	WEIGHT CHECKER / DATE / CODE	DWG SIZE D	40M05908
APPLICATION	DIRECTOR	SCALE 2/1 / UNIT WEIGHT	SHEET 1 OF 2	

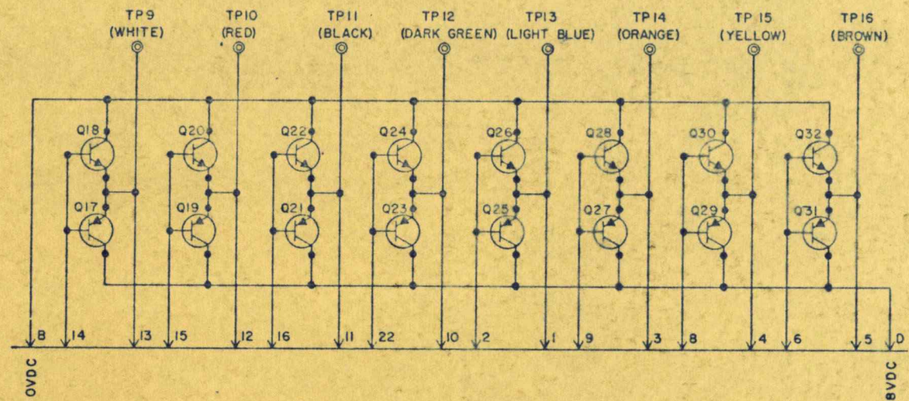
5P

MSFC FORM 422 E AUGUST 1960

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	N.F.	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	SEE SHEET 1	9-21-65	





		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING AUG 25, 64	ASSEMBLY, M-5815 LINE DRIVER STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	DRAWN J. Rogers; CHECKED; ENGINEER; SUBMITTED		
		MATERIAL	APPROVED		
NEXT ASSY	USED ON	HEAT TREATMENT			
APPLICATION		FINAL PROTECTIVE FINISH	DIRECTOR	WEIGHT-CHECKER / DATE / CODE; SCALE 2/1 / UNIT WEIGHT	DWG SIZE D; 40M05908; SHEET 2 OF 2

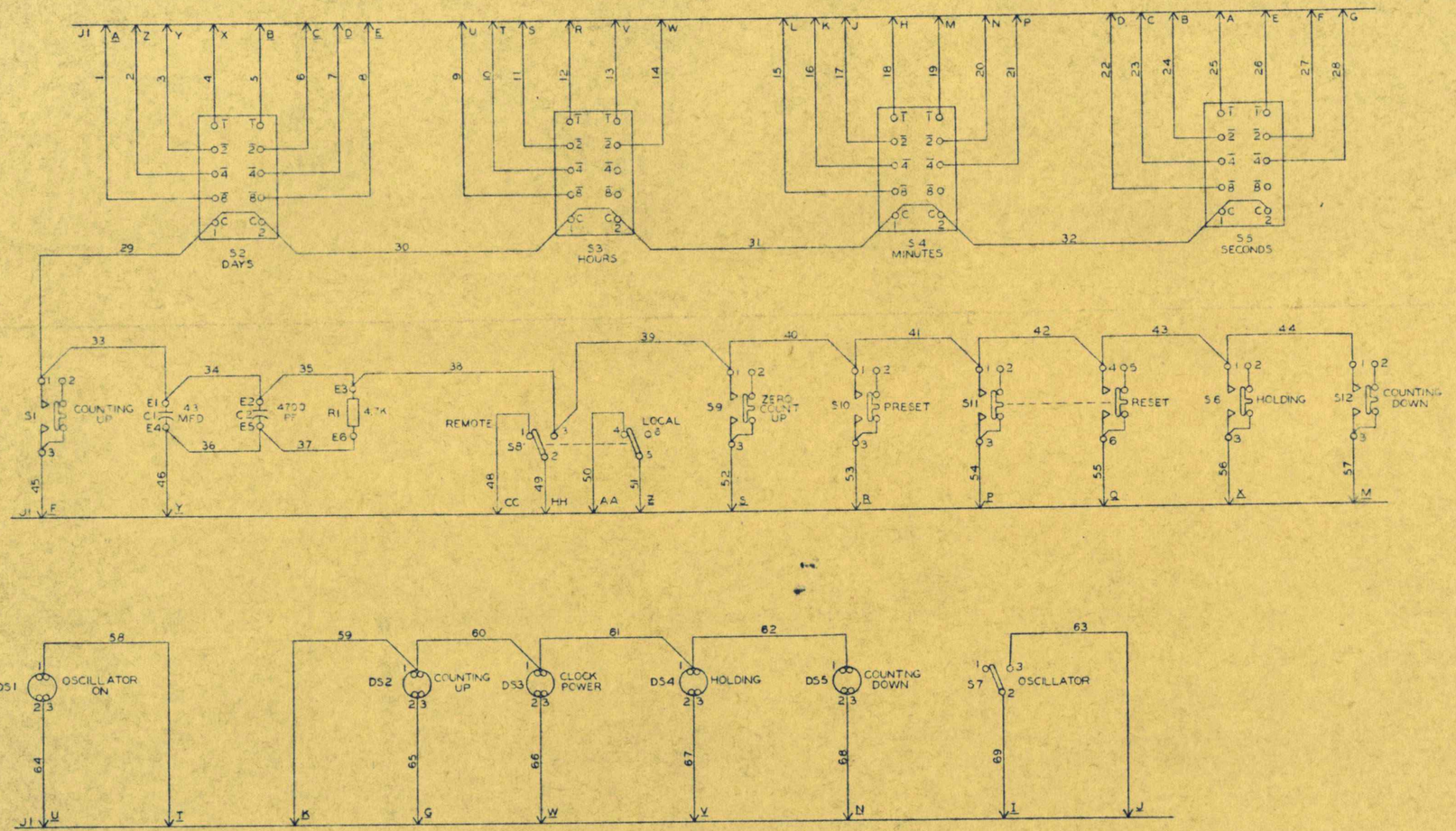
K 12,31 F5D DATA CODE

5P

NSFC FORM 425-2 (AUGUST 1960)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO SP-193 ZP-202	9 23 65	



NOTES:

1. WIRE IN ACCORDANCE WITH DWG 40M06200
2. ALL LAMPS TO BE WHITE
3. ALL WIRE TO BE NO 20 AWG UNLESS OTHERWISE SPECIFIED
4. LAST WIRE NUMBER USED 69
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE REFERENCE DESIGNATION PREFIX WITH UNIT AND ASSEMBLY NUMBER.

40M07043 A

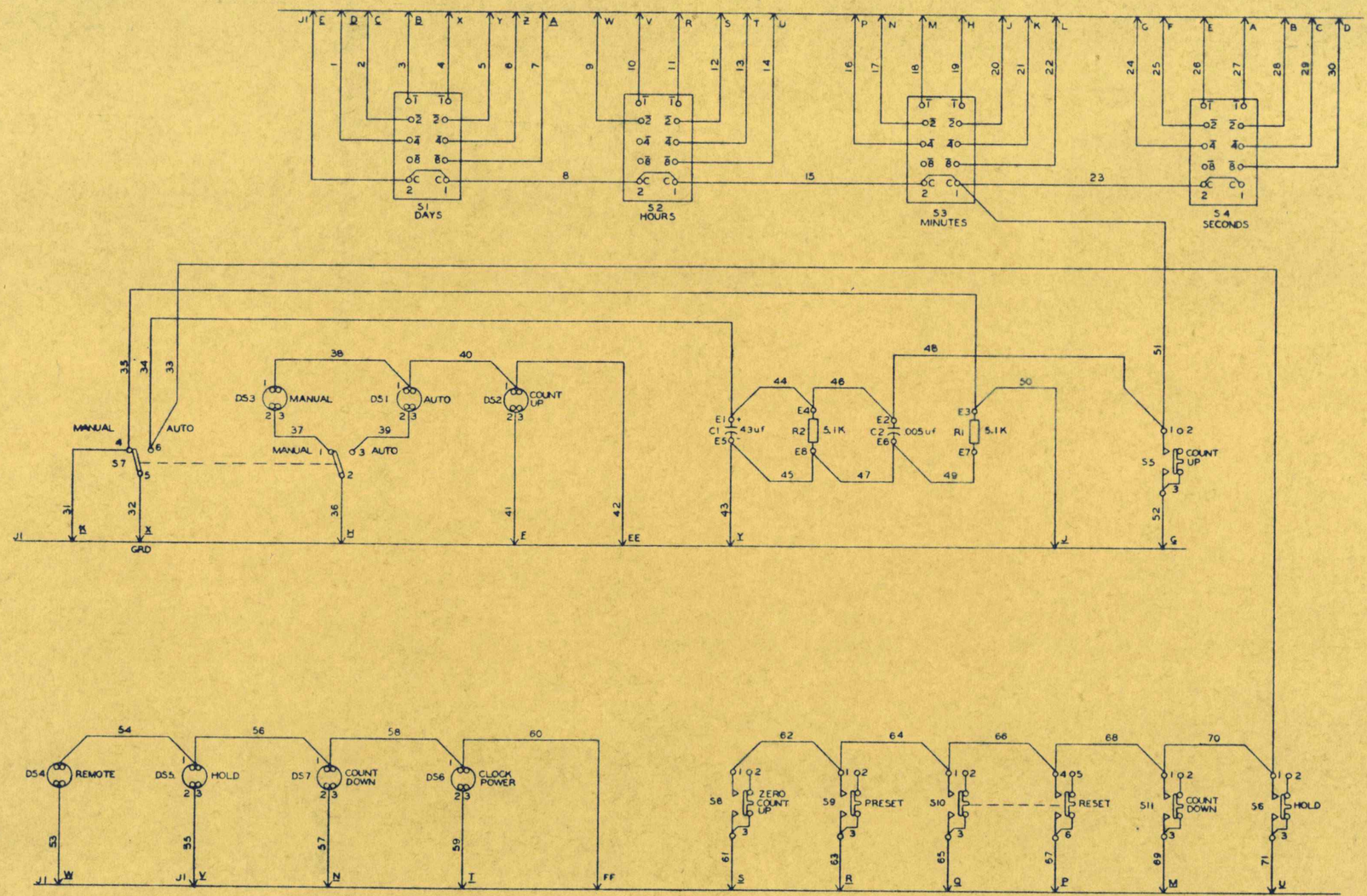
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APR 12 1965	ADVANCED ELECTRICAL UNIT SCHEMATIC COUNT TEST SATURN V
40M07042	MATERIAL	APPROVED	
NEXT ASSY / USED ON	HEAT TREATMENT		
APPLICATION	FINAL PROTECTIVE FINISH	DIRECTOR	

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40M07043 — SHEET 1 OF 1

ODYMATION, INC. 101-7

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC. EO 5P-50, 5P-110A	7-15-65	
	B	INC. EO 5P-272	2-12-66	
	C	INC. EO. 5P-426	2-12-66	
	D	INC. EO. 5P-541	2-12-66	
	E	INC. EO. 5P-693	10-12-66	



NOTES:

1. WIRE IN ACCORDANCE WITH DWG 40M00200.
2. ALL LAMPS SHALL BE WHITE.
3. ALL WIRES TO BE NO. 20 AWG UNLESS OTHERWISE SPECIFIED.
4. LAST WIRE NUMBER USED 71.

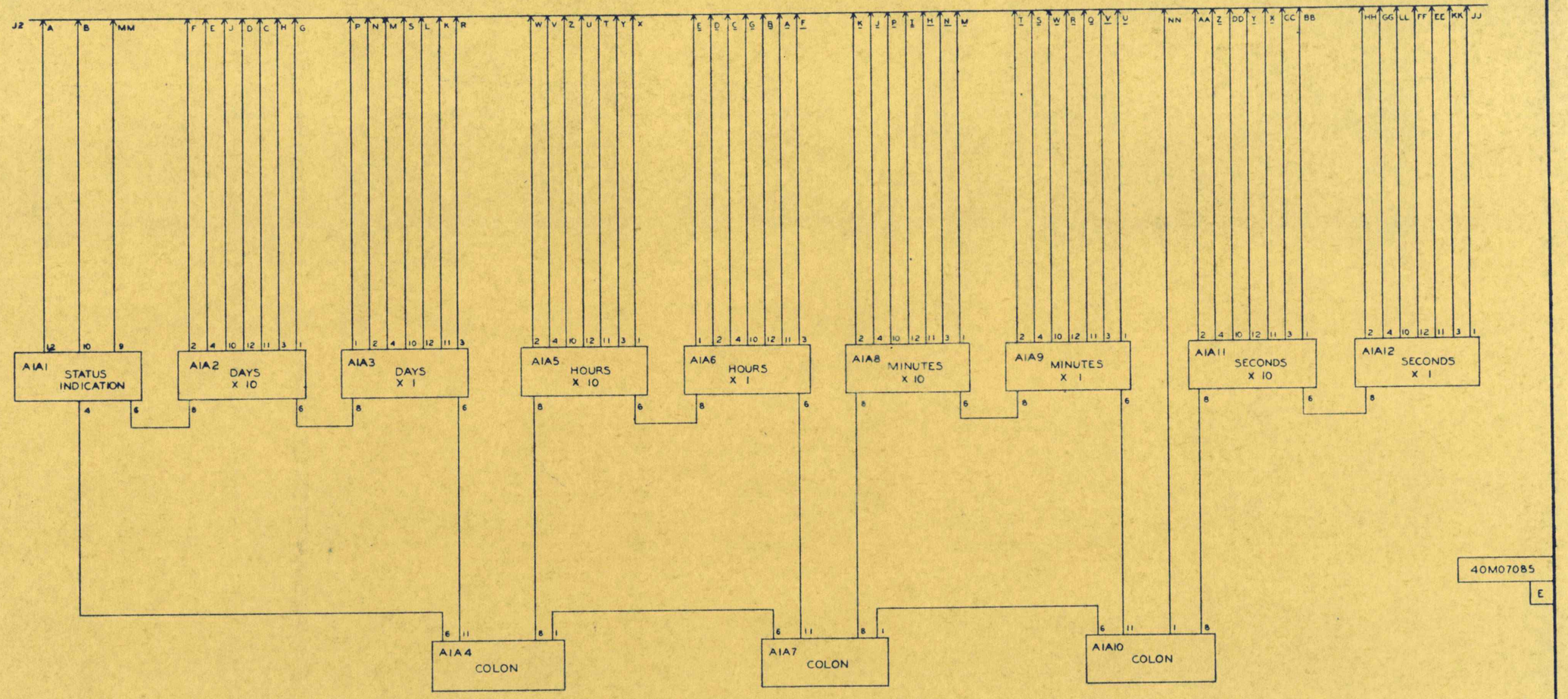
40M07085
E

P5J1

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING APR 10 1965; APPROVED; DIRECTOR	ADVANCED ELECTRICAL UNIT SCHEMATIC COUNT CONTROL COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
40M07082			WEIGHT CHECKER / DATE / CODE	DWG SIZE D	40M07085
NEXT ASSY / USED ON			SCALE 1/1 / UNIT WEIGHT	SHEET 1 OF 2	
APPLICATION					

Change Date
30 November, 1966

PART NO.	REF	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		D	INC EO SP-541	2-12-66	
		E	INC EO SP-693	10-12-66	

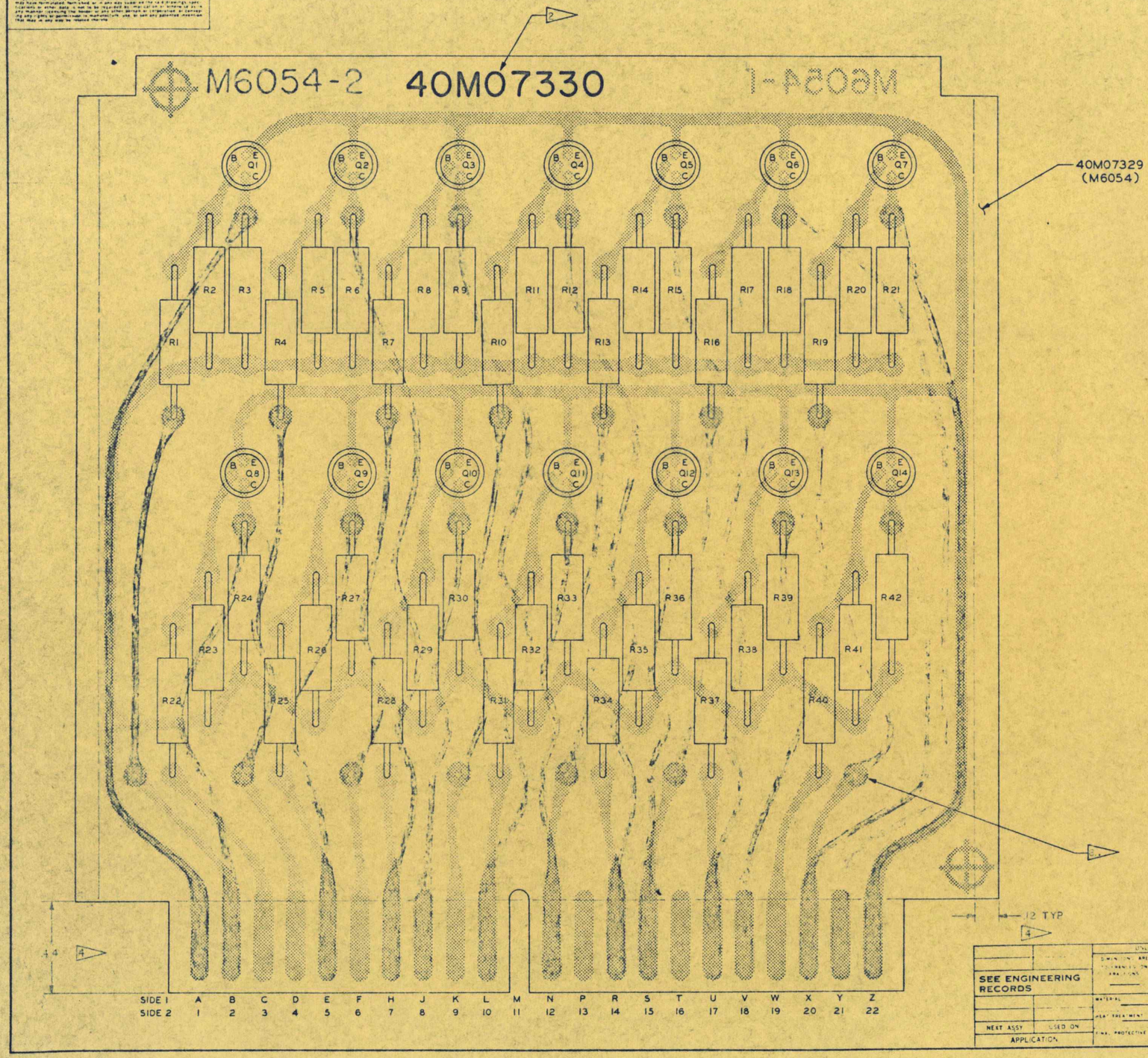

J2
A
B
MM
F E J D C H G
P N M S L K R
W V Z U T Y X
E D C G B A F
K J P I H N M
T S W R Q V U
NN AA Z DD Y X CC BB
HH GG LL FF EE KK JJ
A1A1 STATUS INDICATION
A1A2 DAYS X 10
A1A3 DAYS X 1
A1A5 HOURS X 10
A1A6 HOURS X 1
A1A8 MINUTES X 10
A1A9 MINUTES X 1
A1A11 SECONDS X 10
A1A12 SECONDS X 1
A1A4 COLON
A1A7 COLON
A1A10 COLON

40M07085
E

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS DECIMALS ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING FEB.12,1966; DRAWN; CHECKED; ENGINEER; SUBMITTED; APPROVED; DIRECTOR	ADVANCED ELECTRICAL UNIT SCHEMATIC COUNT CONTROL COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
40M07082 NEXT ASSY USED ON APPLICATION		WEIGHT CHECKED; SCALE 1/1; DATE; CODE; UNIT WEIGHT		SIZE D; 40M07085; SHEET 2 OF 2

11-15-66

PART NO.	REV	REVISIONS			
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL
			A	ENG RELEASE		



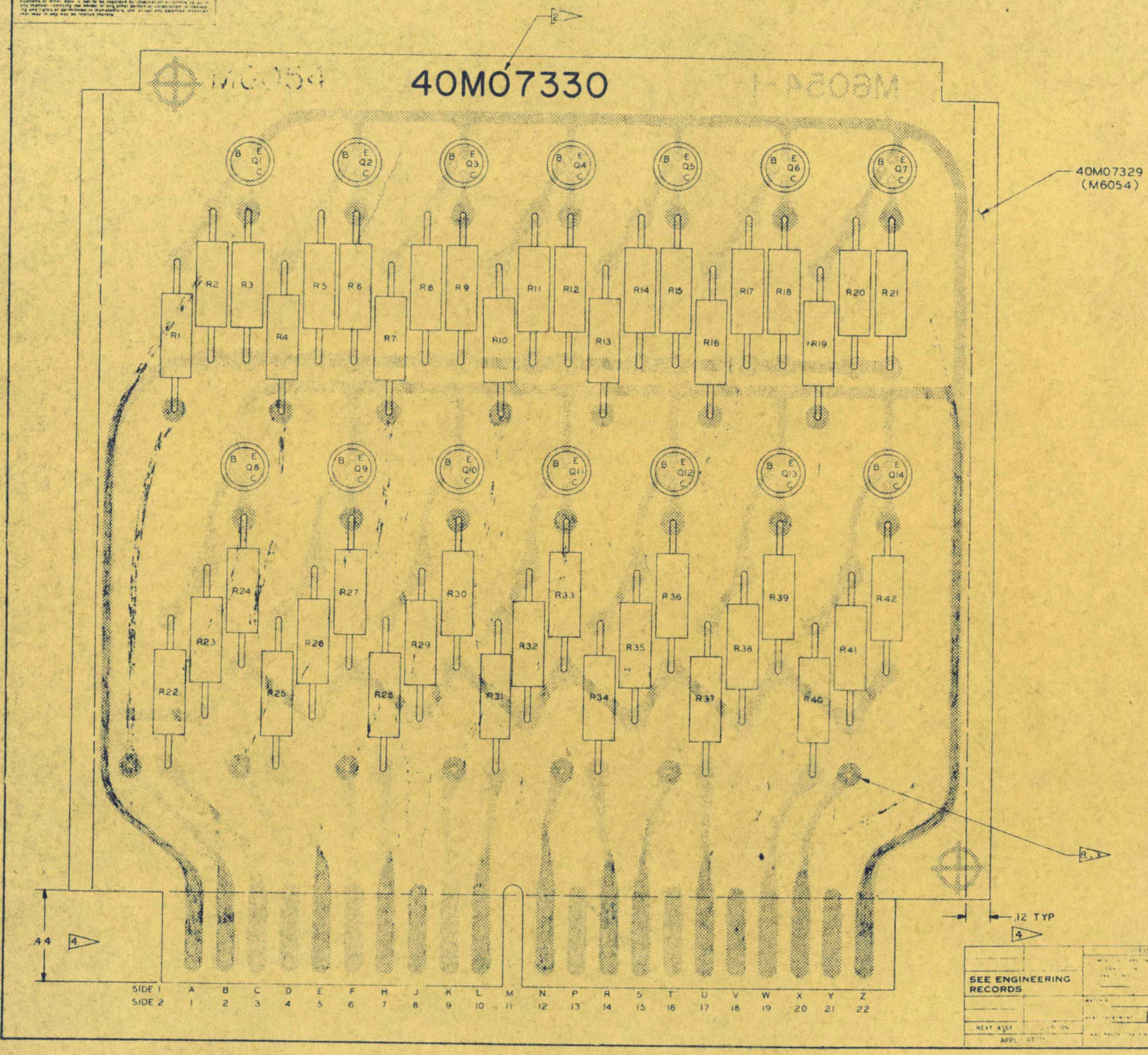
NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC 200-4 OR MSFC-PROC-224.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATIONS PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
6. ALL RESISTORS ARE 500 W ±5 %.
7. SOLDER COMPONENT LEADS AND JUMPERS ON BOTH SIDES OF BOARD WHERE APPLICABLE.
8. JUMPERS TO BE NO. 20 AWG SOLID COPPER WIRE PER QQ-W-343.

40M07330

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING JAN 8, 65	ASSEMBLY, M6054 VOLTAGE REFERENCE STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE ALABAMA
NEXT ASSY USED ON APPLICATION	MATERIAL HEAT TREATMENT FINISH PROTECTIVE FINISH	SUBMITTED APPROVED DIRECTOR	WEIGHT CHECKED DATE CODE SCALE 4/1 UNIT WEIGHT	DWG & TEC D 40M07330 SHEET 1 OF 2

REVISIONS				
LTR	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC EO 5P-66	11-17-65	



NOTES:

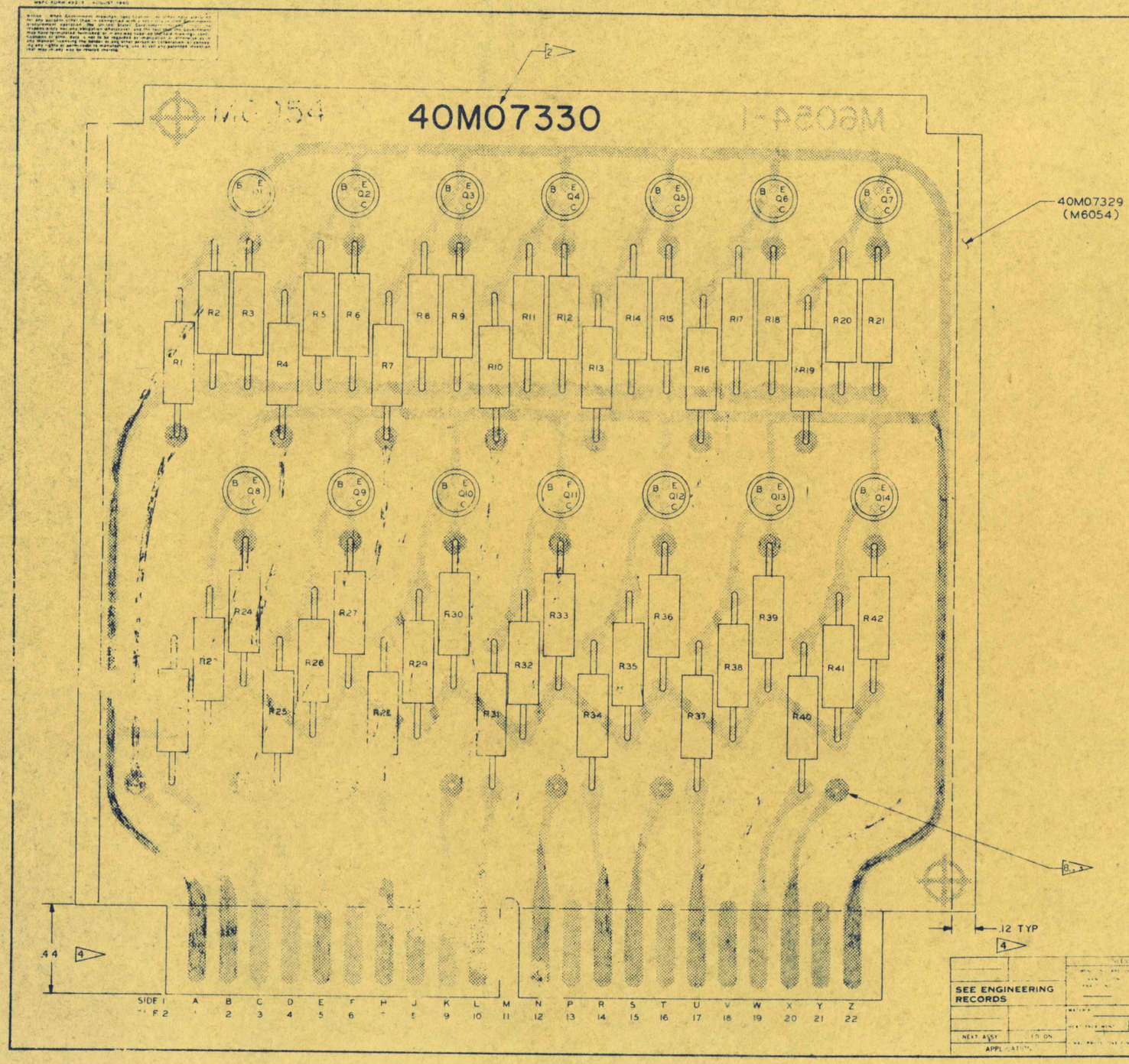
1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC 200-4 OR MSFC-PROC-224.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293.
4. AREAS AS DIMENSIONED SHALL BE FREE OF COMFORMAL COATING ON BOTH SIDES OF BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATIONS PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
6. ALL RESISTORS ARE 500 W ±5 %.
7. SOLDER COMPONENT LEADS AND JUMPERS ON BOTH SIDES OF BOARD WHERE APPLICABLE.
8. JUMPERS TO BE NO. 20 AWG SOLID COPPER WIRE PER QQ-W-343.

40M07330

SEE ENGINEERING RECORDS	ORIGINAL DATE OF DRAWING JAN 8,65	ASSEMBLY, M6054 VOLTAGE REFERENCE STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
NEXT ASSY		WEIGHT CHECKER DATE CODE	SIZE D 40M07330
APPL AT	DIRECTOR	SCALE 4/1 UNIT WEIGHT	SHEET 1 OF 2

PID

Change Date
26 June 1967



REVISIONS					
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC EO SP-66	11-17-65	

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC 200-4 OR MSFC-PROC-224.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293.
4. AREAS AS DIMENSIONED SHALL BE FREE OF COMFORMAL COATING ON BOTH SIDES OF BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATIONS PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
6. ALL RESISTORS ARE 500 W ± 5 %.
7. SOLDER COMPONENT LEADS AND JUMPERS ON BOTH SIDES OF BOARD WHERE APPLICABLE.
8. JUMPERS TO BE NO. 20 AWG SOLID COPPER WIRE PER QQ-W-343.

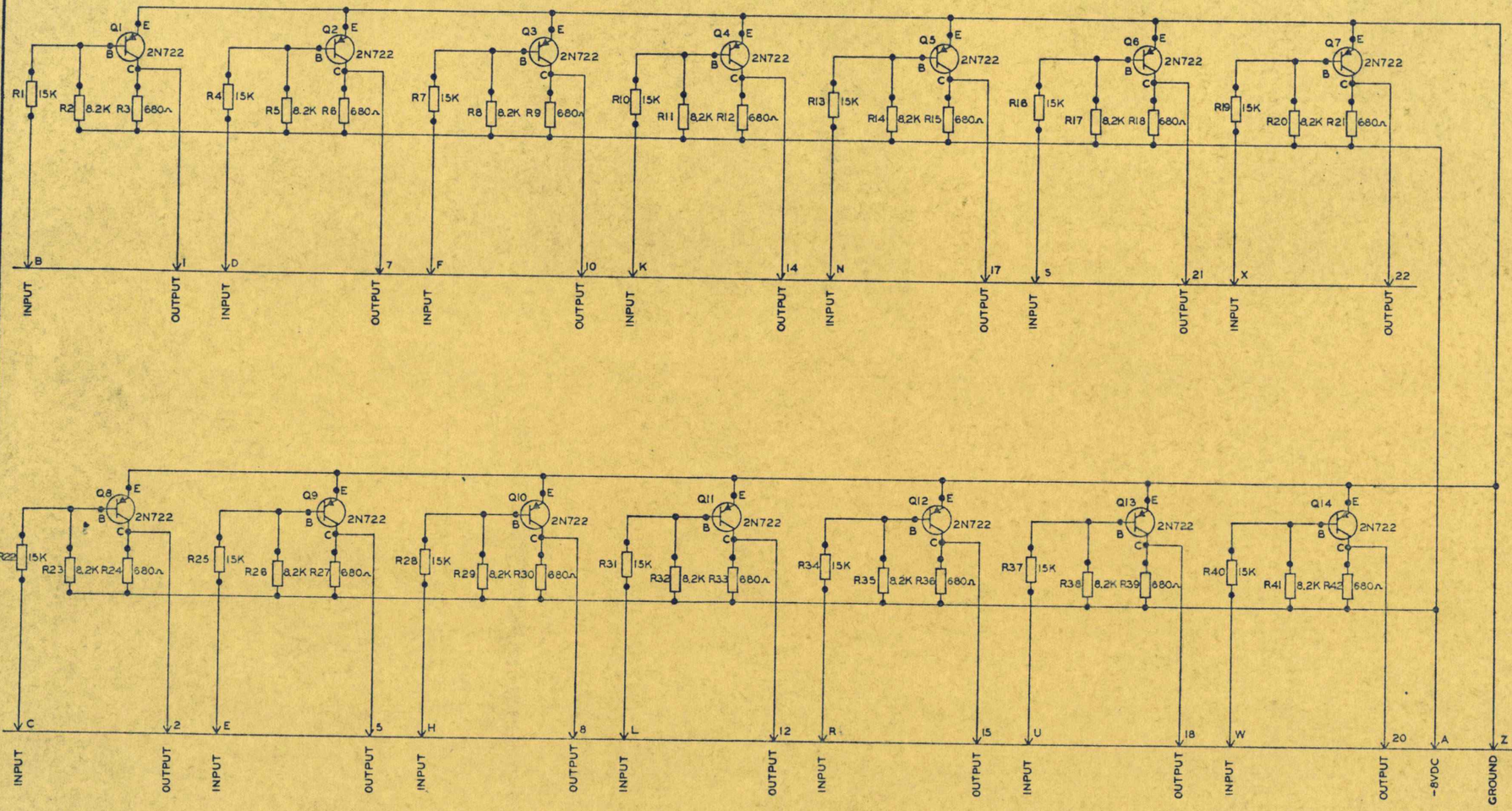
40M07330

SEE ENGINEERING RECORDS		ORIGINAL DATE OF DRAWING JAN 8,65	ASSEMBLY, M6054 VOLTAGE REFERENCE STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
NEXT ASSY	USED ON			SIZE D 40M07330
APPLICATION		DIRECTOR	SCALE 4/1	SHEET 1 OF 2

MSFC FORM 482-3 (AUGUST 1960)

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION, OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	M.F.	REVISIONS				
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL



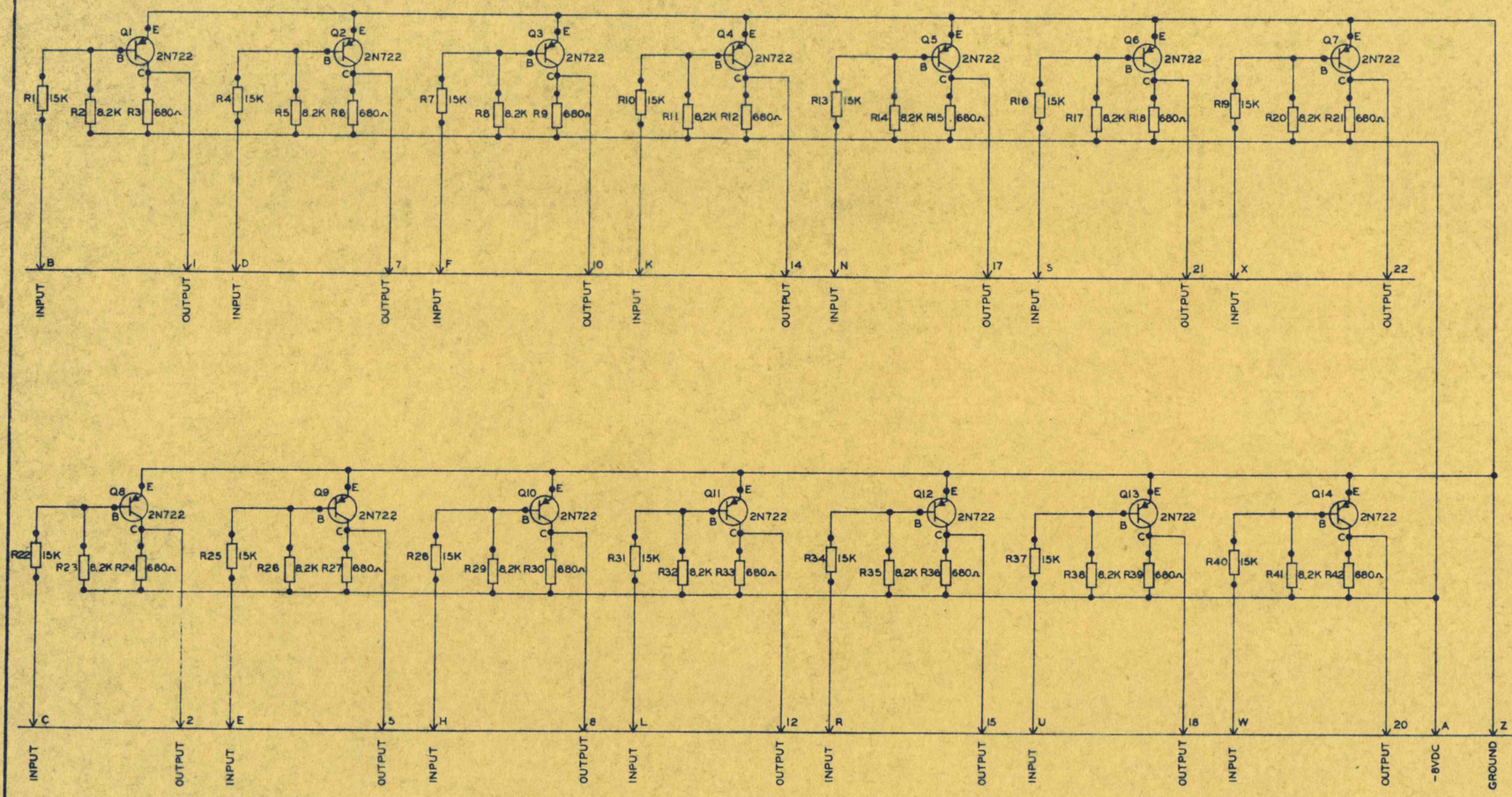
40M07330

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING JAN 8, 65	ASSEMBLY, M6054 VOLTAGE REFERENCE STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	DRAFTSMAN, CHECKED, CHECKER, STRESS, ENGINEER, ENGINEER		SIZE D 40M07330
NEXT ASSY	USED ON	MATERIAL	SUBMITTED		
APPLICATION		HEAT TREATMENT	APPROVED	WEIGHT CHECKER, DATE, CODE	SHEET 2 OF 2
		FINAL PROTECTIVE FINISH	DIRECTOR	SCALE, UNIT WEIGHT	

MSFC FORM 488-S (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA, IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING, ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	M F	REVISIONS				
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M07330

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING JAN 8, 65	ASSEMBLY, M6054 VOLTAGE REFERENCE STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKER		SIZE D 40M07330
NEXT ASSY	USED ON	MATERIAL	CHECKED ENGINEER		WEIGHT CHECKER DATE CODE
APPLICATION		HEAT TREATMENT FINAL PROTECTIVE FINISH	SUBMITTED APPROVED DIRECTOR		SCALE UNIT WEIGHT SHEET 2 OF 2

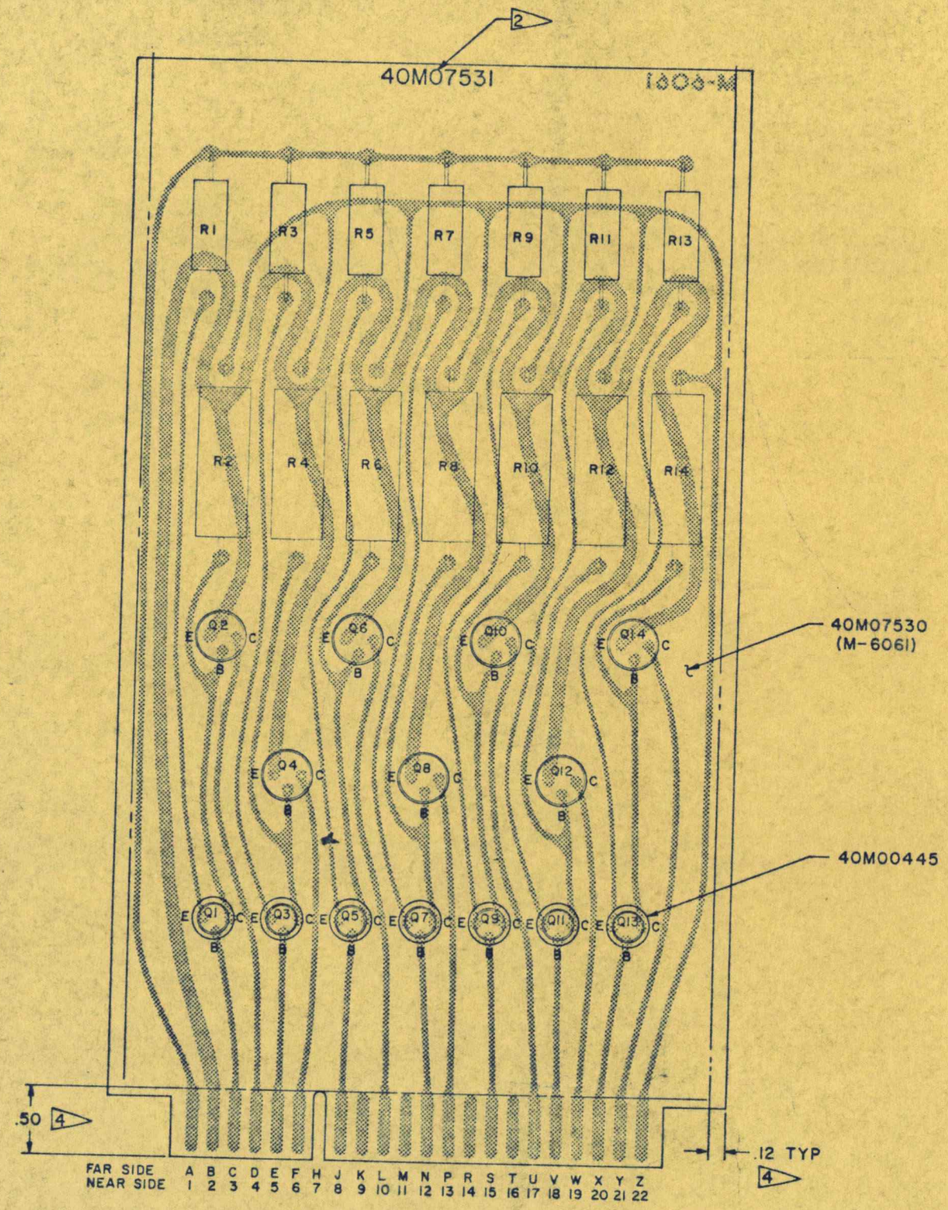
PID

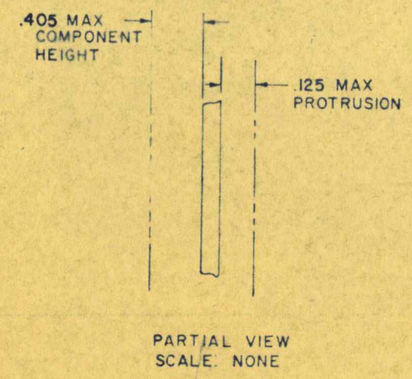
4/10/68 IP

Change Date
26 June 1967

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED, BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INCORPEO 5P-45	10-28-65	





PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC 200-4 OR MSFC-PROC-224.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.

40M07531
A

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES: .XX ±.03	ORIGINAL DATE OF DRAWING MAR 31, 1965	ASSEMBLY, M-6061 LAMP DRIVER STANDARD
NEXT ASSY. USED ON APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH 3	APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE 2/1; UNIT WEIGHT

PID

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

SIZE D | 40M07531

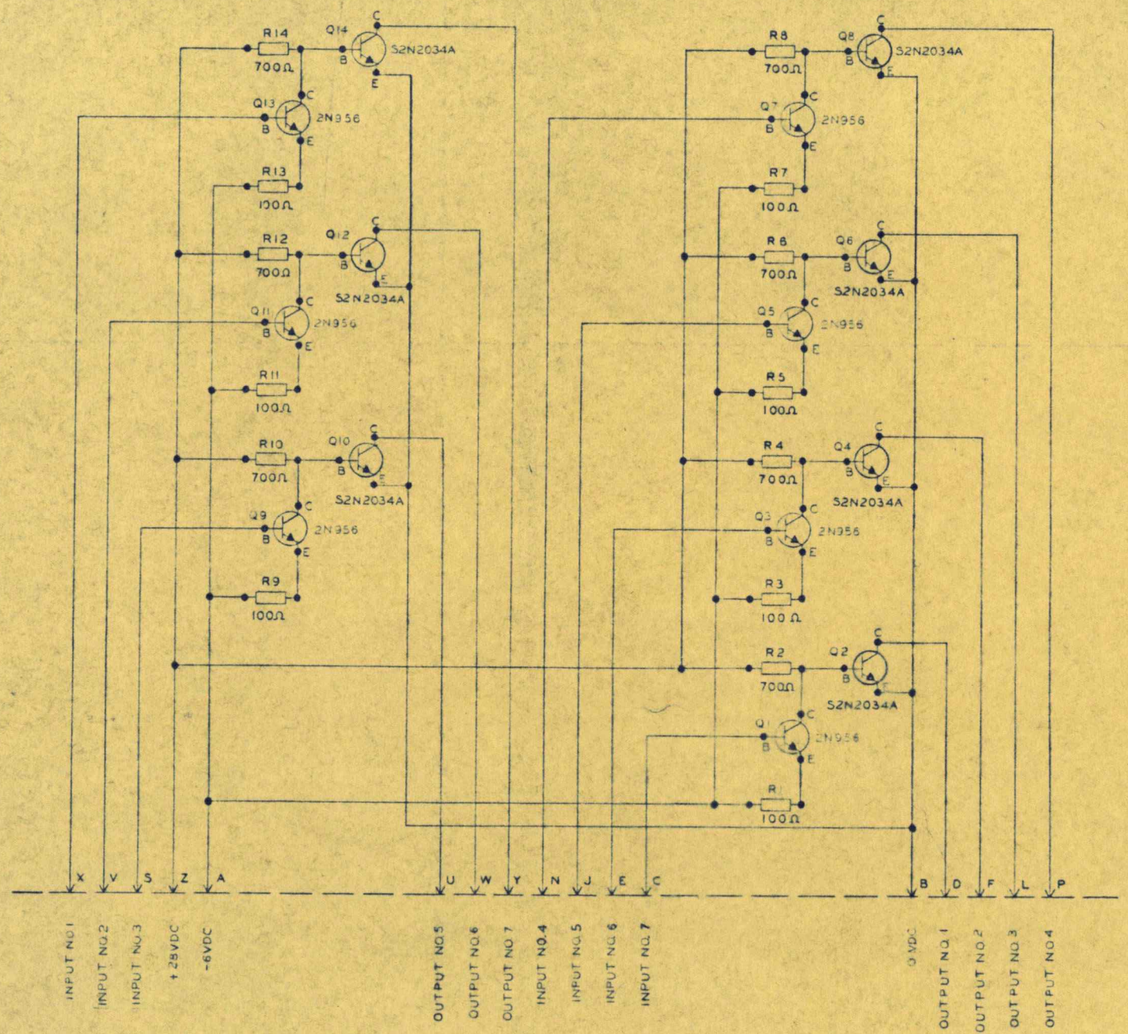
SHEET 1 OF 2

4/29/65 IP

NSFC FORM 433-9 (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FURNISHED, FOR ANY REASON, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	M F	REVISIONS				
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M07531

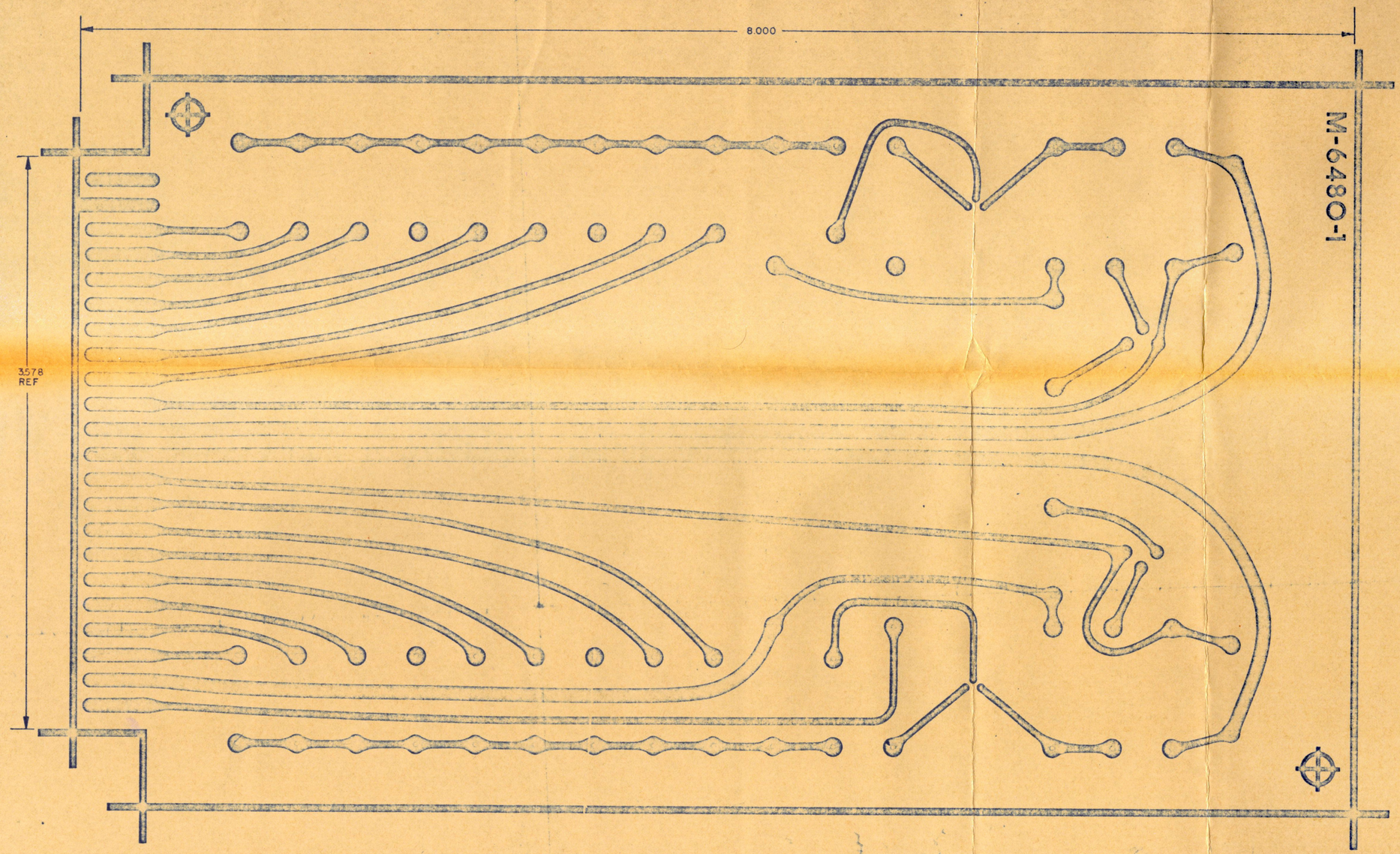
PID

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING FEB 13 '65	ASSEMBLY, M-6061 LAMP DRIVER STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	CHECKED ENG. MECH. SUBMITTED		DWG SIZE D 40M07531
NEXT ASSY	USED ON	MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH	APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE SCALE UNIT WEIGHT	SHEET 2 OF 3
APPLICATION					

COPYMATION, INC. 101-7

4/30/65 IP

PART NO.	MT	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



NOTES:

1. THE ORIGINAL OF THIS DRAWING IS THE PRINTED CIRCUIT MASTER.
2. PRINTS OF THIS DRAWING ARE FOR REFERENCE ONLY.
3. REFERENCE DRAWING:
   DRILLING & TRIMMING 40M07653

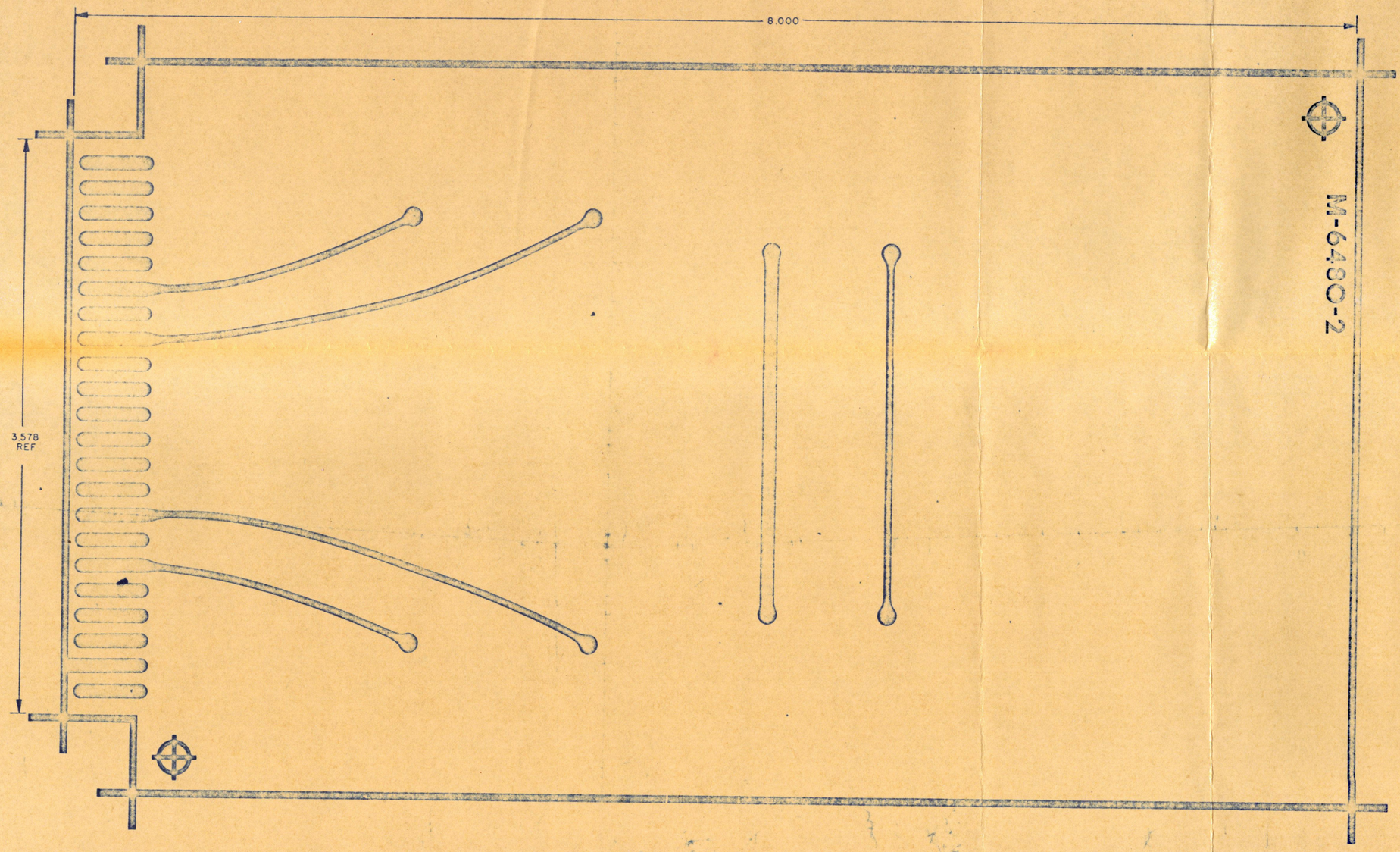
40M07651

REFERENCE MASTER
FOR REPRODUCTION OF
REFERENCE PRINTS ONLY

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS; DECIMALS .XXX±.005; ANGLES	ORIGINAL DATE OF DRAWING MAR 15, 1965	MASTER, M-6480 TIME OUTPUT COMMAND STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED		SIZE E; 40M07651
NEXT ASSY	USED ON			SCALE 4/1; SHEET 1 OF 2
APPLICATION		DIRECTION		

P1A

PART NO.	QTY	REVISIONS			
		ZONE	DESCRIPTION	DATE	APPROVAL



40M07651

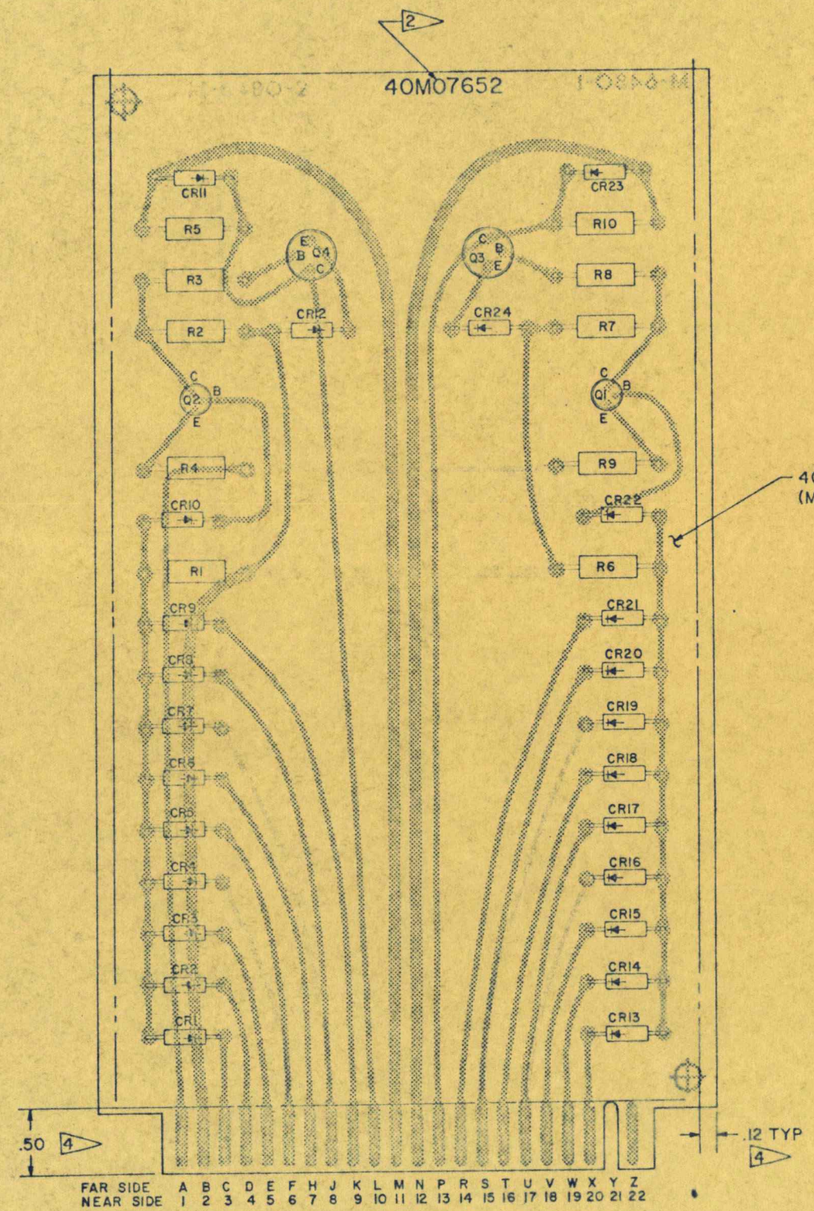
REFERENCE MASTER
FOR REPRODUCTION OF
REFERENCE PRINTS ONLY

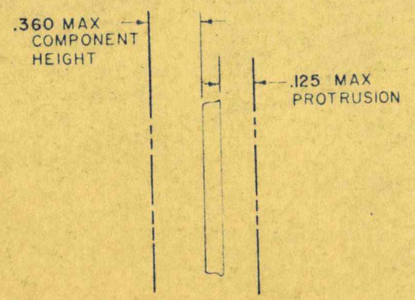
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES: .XXX ± .005	ORIGINAL DATE OF DRAWING MAR 12, 1965	MASTER, M-6480 TIME OUTPUT COMMAND STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON / APPLICATION	MATERIAL / HEAT TREATMENT / FINISH, PROTECTIVE FINISH	APPROVED / DIRECTOR	WEIGHT CHECKED / WEIGHT	SIZE E; 40M07651; SCALE 4/1; SHEET 2 OF 2

PIA

REVISIONS

ZONE	SYM	DESCRIPTION	DATE	APPROVAL





PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-158.
2. STAMP PER MSFC-STD-383
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293, COATING TO BE APPLIED BY SPRAY PROCESS.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD.
5. SOLDER COMPONENT LEADS ON BOTH SIDES OF THE BOARD WHERE APPLICABLE.

40M07652

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS ___ DECIMALS .XX ± .03 ANGLES ___; MATERIAL ___; HEAT TREATMENT ___; FINAL PROTECTIVE FINISH 3	ORIGINAL DATE OF DRAWING APRIL 1, 1965; APPROVED; DIRECTOR	ASSEMBLY, M-6480 TIME OUTPUT COMMAND STANDARD; WEIGHT CHECKER ___ DATE ___ CODE ___; SCALE 2/1 WT. ___ SHEET 1 OF 2
NEXT ASSY ___ USED ON ___; APPLICATION ___			IP

PID

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

CODE IDENT NO. 80808 SIZE D 40M07652

NASA FORM 432-S (AUGUST 1966)

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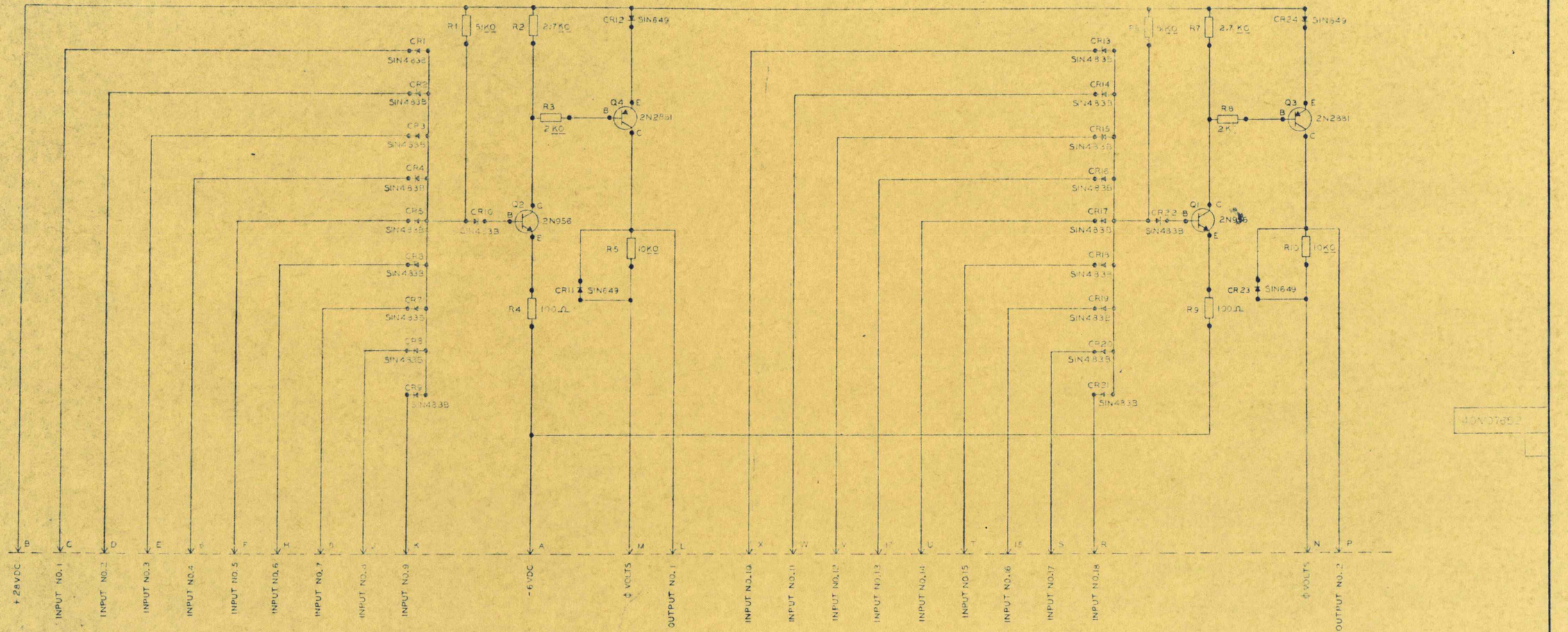
PART NO	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M07852

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING: MAR 10, 1965	ASSEMBLY, M-6480 TIME OUTPUT COMMAND STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
NEXT ASSY / USED ON	MATERIAL	DRAWN / CHECKED / ENGR APPROVED / MGR APPROVED		DWG SIZE D	40M07852
APPLICATION	HEAT TREATMENT	APPROVED	WEIGHT CHECKER / DATE / CODE		
	FINAL PROTECTIVE FINISH	DIRECTOR	SCALE / UNIT WEIGHT	SHEET 2 OF 2	

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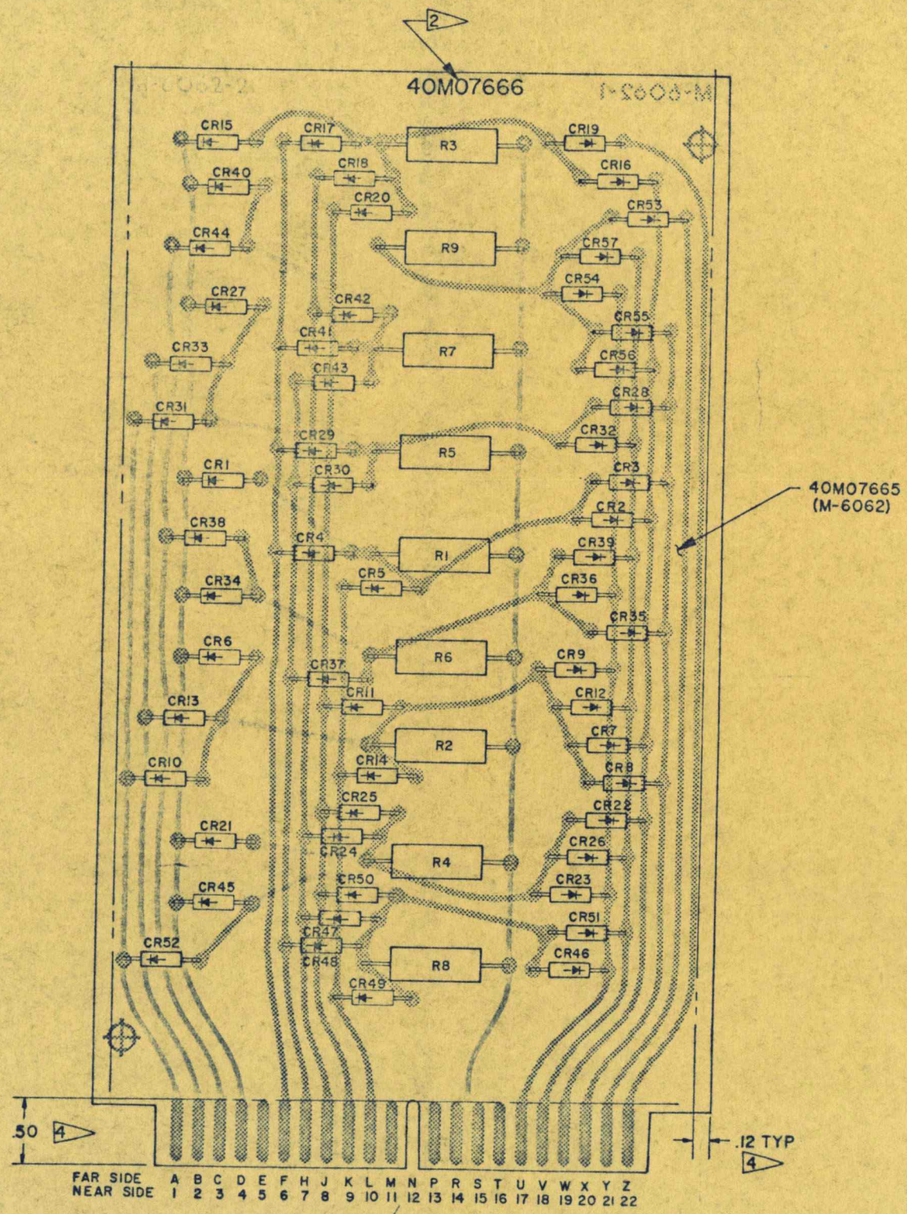
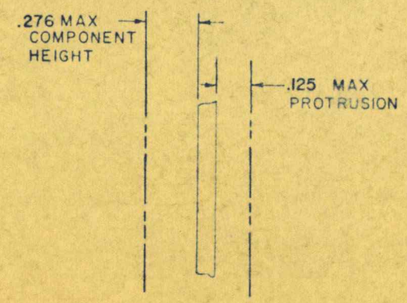
PART NO	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL





PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-158.
2. STAMP PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293, COATING TO BE APPLIED BY SPRAY PROCESS.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD.
5. SOLDER COMPONENT LEADS ON BOTH SIDES OF THE BOARD WHERE APPLICABLE.

40M07666

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS; DECIMALS .XX ±.03; ANGLES	ORIGINAL DATE OF DRAWING APR 1, 1965	ASSEMBLY, M-6062 DECODER BOARD STANDARD
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH 3	APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE 2/1; UNIT WEIGHT; SHEET 1 OF 2

PID

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40M07666

5/3/65 IP

4/2

MSFC FORM 4223 (AUGUST 1960)

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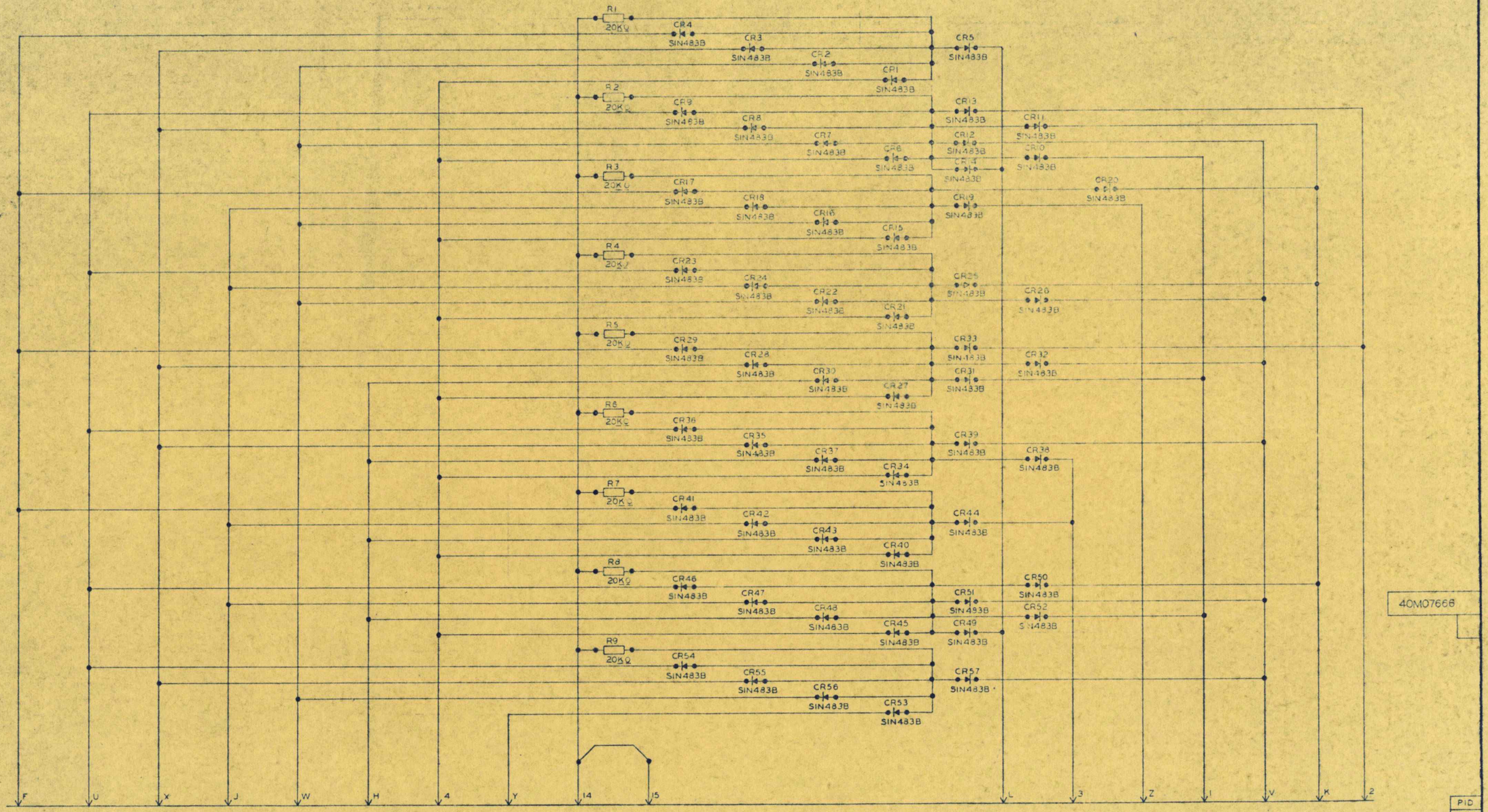
PART NO.	W.P.	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M07668

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APR 7 1965
NEXT ASSY	USED ON	MATERIAL	CHECKER, ENGINEER, SUBMITTED
APPLICATION		HEAT TREATMENT	APPROVED
		FINAL PROTECTIVE FINISH	DIRECTOR

ASSEMBLY, M-6062 DECODER BOARD STANDARD

WEIGHT CHECKER | DATE | CODE

SCALE | UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

PID | DATA CODE

DWG SIZE D | 40M07666 | SHEET 2 OF 2

5/5/65 IP

COPYMATION, INC. 101-7

REVISIONS			
PART NO.	ZONE	DESCRIPTION	DATE / APPROVAL

NOTES:

1. LAST BALLOON NO. USED, 56.
2. REFERENCE DRAWINGS; WIRING LIST A40M08266.
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN, FOR COMPLETE DESIGNATION PREFIX WITH UNIT NO. & ASSEMBLY DESIGNATION.
4. REF DWG 40M08330 FOR ASSEMBLY.

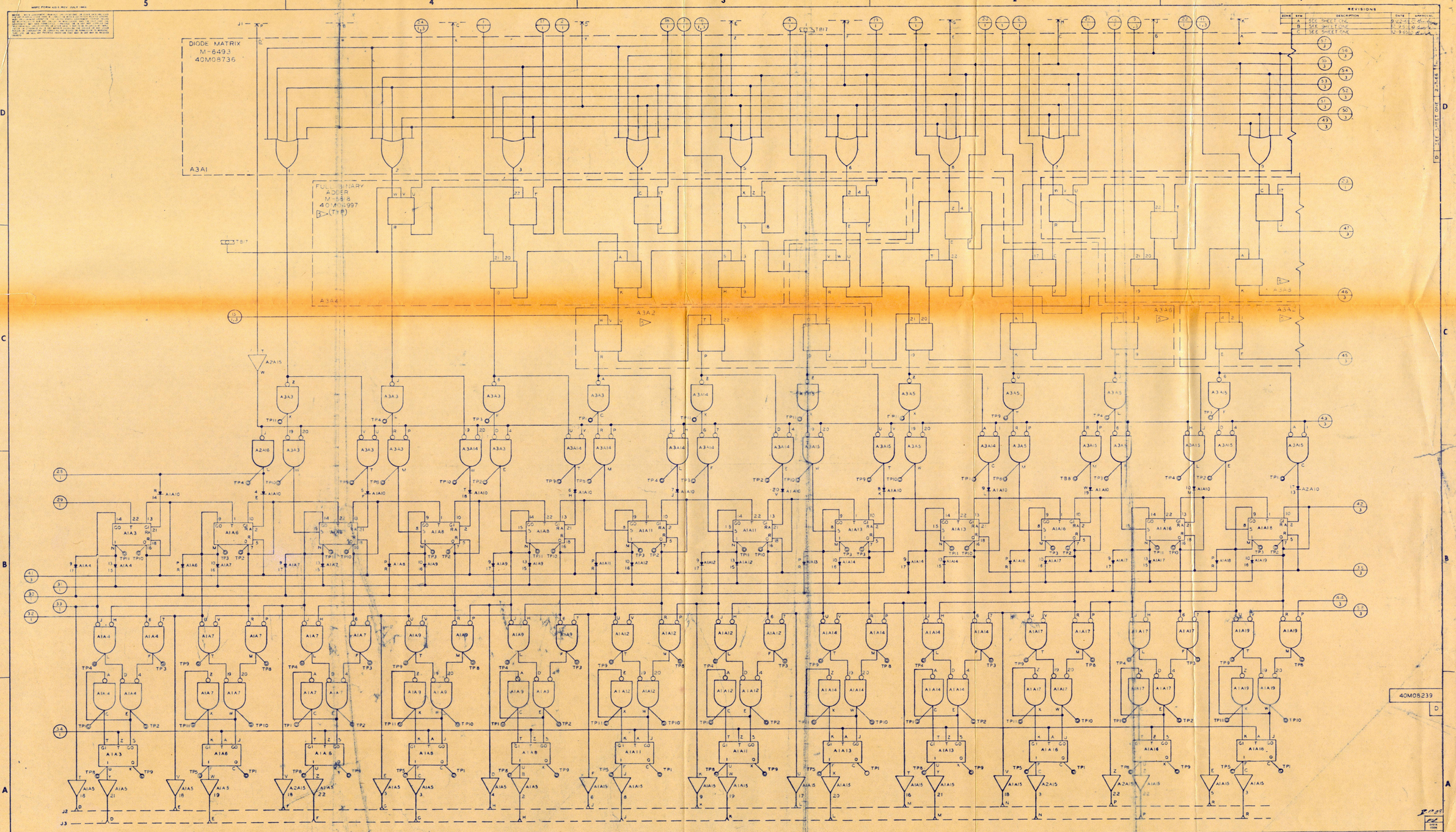
▷ TITLE: FULL BINARY ADDER, M-5818 DWG 40M04497

DIODE MATRIX A2A1 M-5433 40M08735

DIODE MATRIX A2A3 M-5493 40M08737

	UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAY 3,65	LOGIC DIAGRAM BINARY COUNTER/ GRAY CODE CONVERTER COUNT CLOCK TYPE I SATURN V
SEE ENGINEERING RECORDS	DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	DRAFTSMAN	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
	MATERIAL	CHECKER	SIZE J, 40M08239
	HEAT TREATMENT	APPROVED	SHEET 1 OF 3
NEXT ASSY USED ON	FINISH PROTECTIVE	WEIGHT CHECKER, DATE, CODE	
APPLICATION		SCALE, UNIT WEIGHT	

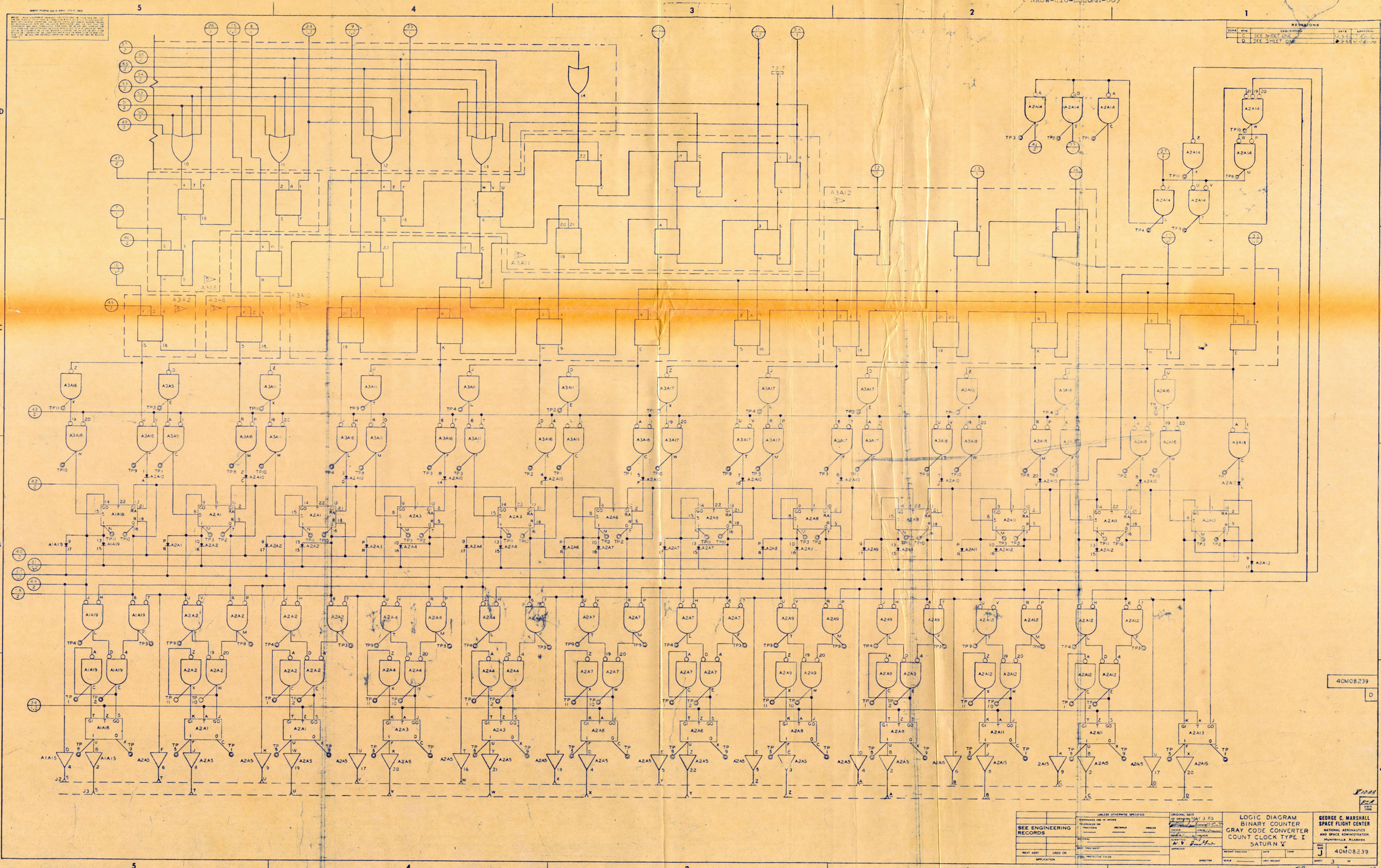
40M08239 D



		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAY 3,1965	LOGIC DIAGRAM BINARY COUNTER GRAY CODE CONVERTER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	APPROVED		SIZE J 40M08239
NEXT ASSY	USED ON	MATERIAL FINISH TREATMENT FINAL PROTECTIVE FINISH			SHEET 2 OF
APPLICATION			DIRECTOR	WEIGHT CHECKER DATE CODE SCALE UNIT WEIGHT	

40M08239 D

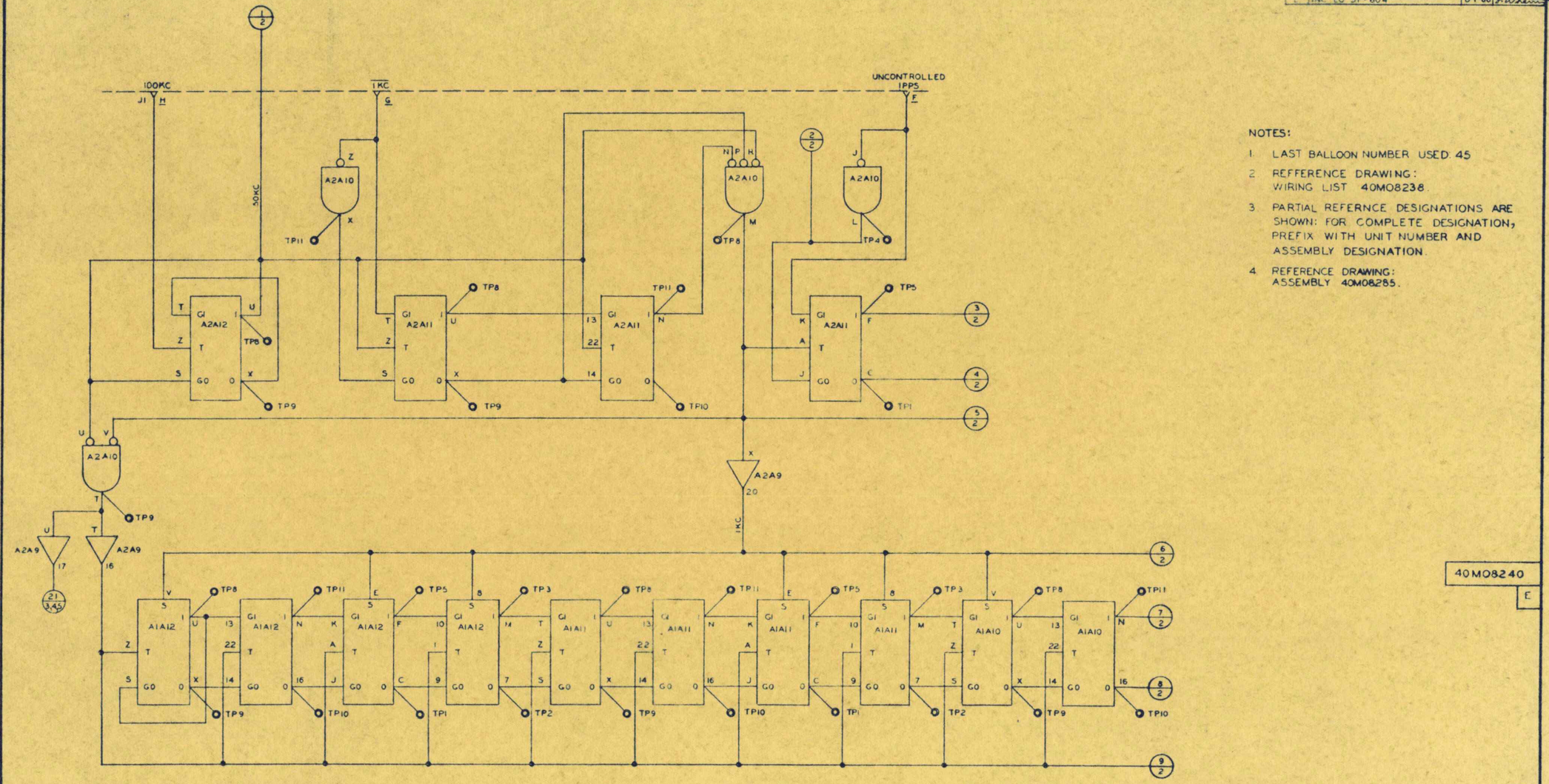
REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	C	SEE SHEET ONE	7-1-65	
	D	SEE SHEET ONE	9-6-66	



SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINISH; PROTECTIVE FINISH; NEXT ASSY USED ON; APPLICATION	ORIGINAL DATE OF DRAWING MAY 3 65; DRAWN; CHECKED; ENGINEER; APPROVED; DIRECTOR	LOGIC DIAGRAM BINARY COUNTER GRAY CODE CONVERTER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER; NATIONAL AERONAUTICS AND SPACE ADMINISTRATION; HUNTSVILLE ALABAMA; SIZE J; 40M08239; WEIGHT; SCALE; SHEET 3 OF 33

40M08239 D

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC EO 5P-116	9-23-65	
	B	INC EO 5P-238	12-9-65	
	C	INC EO 5P-401	12-9-65	
	D	INC EO 5P-512	2-7-66	
	E	INC EO 5P-604	8-1-66	



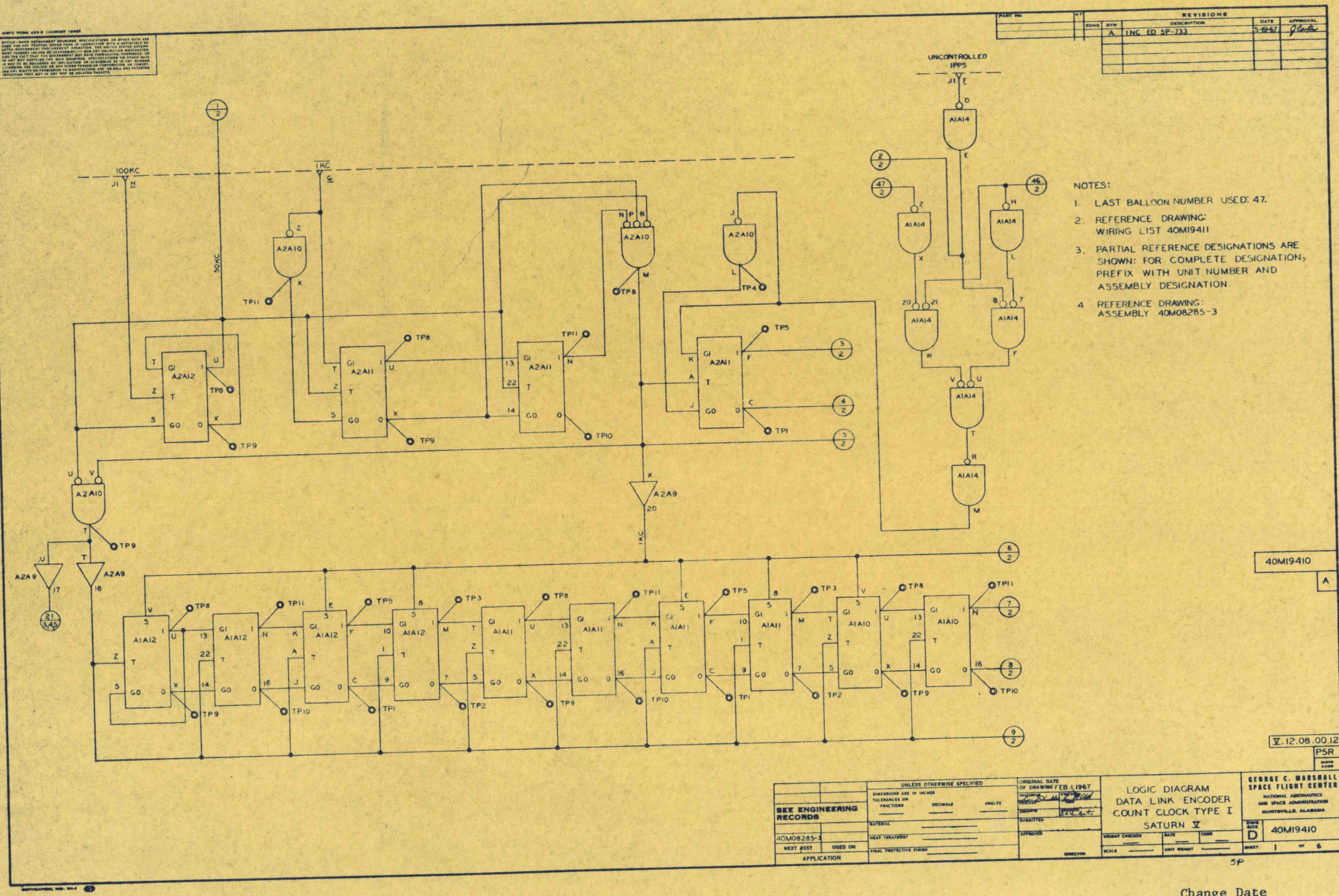
NOTES:

1. LAST BALLOON NUMBER USED 45
2. REFFERENCE DRAWING: WIRING LIST 40M08238.
3. PARTIAL REFERNCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
4. REFERENCE DRAWING: ASSEMBLY 40M08285.

40M08240
E

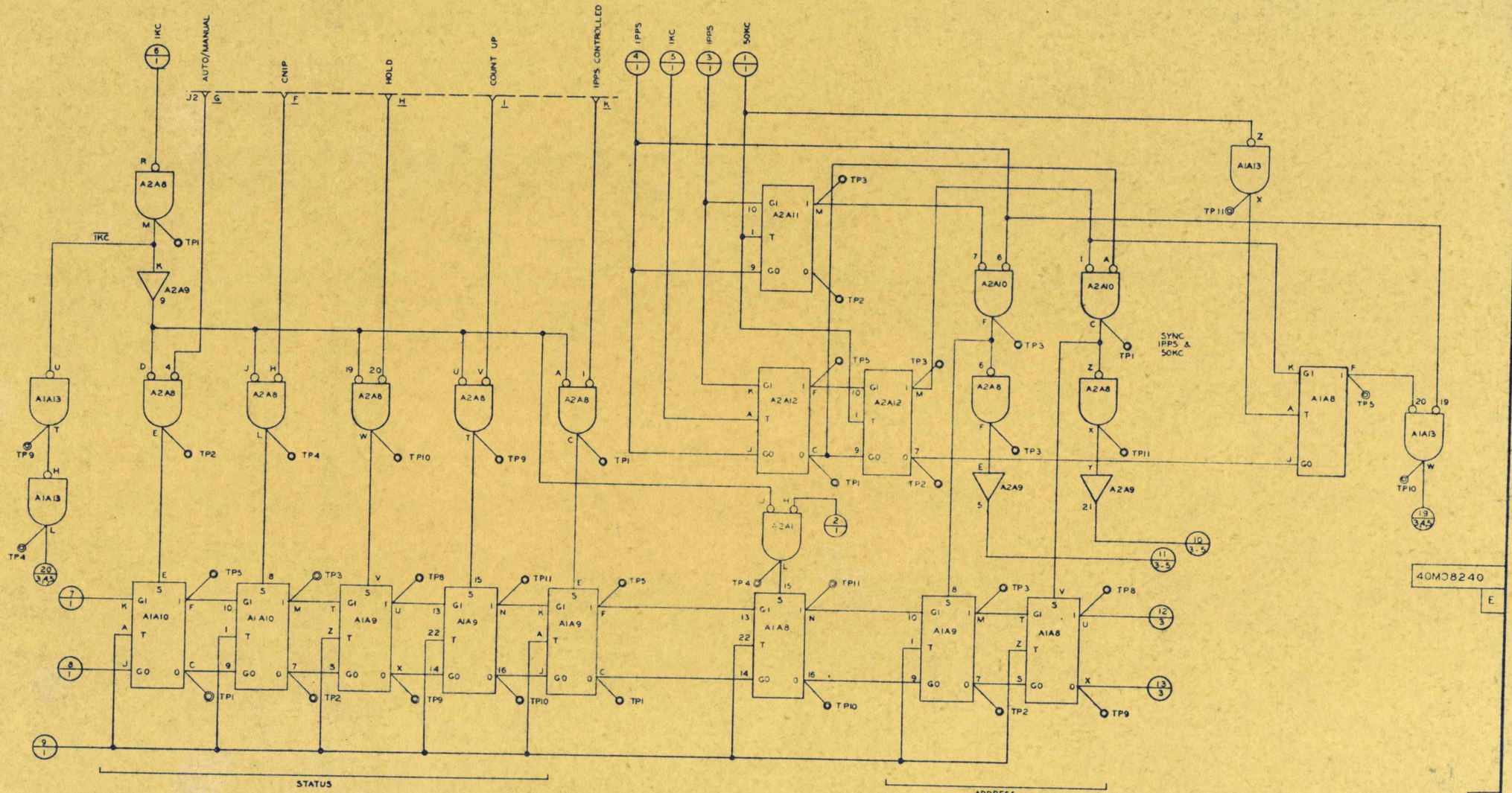
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING APR 30 65	LOGIC DIAGRAM DATA LINK ENCODER COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON / APPLICATION			GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
			SIZE D, 40M08240, SHEET 1 OF 6

P5R



Change Date
26 June 1967

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	SEE SHEET ONE	9 23 65	D Burke
	B	SEE SHEET ONE	12-9-65	[illegible]
	D	SEE SHEET ONE	2766	D Burke
	E	SEE SHEET ONE	8-1-66	D Burke

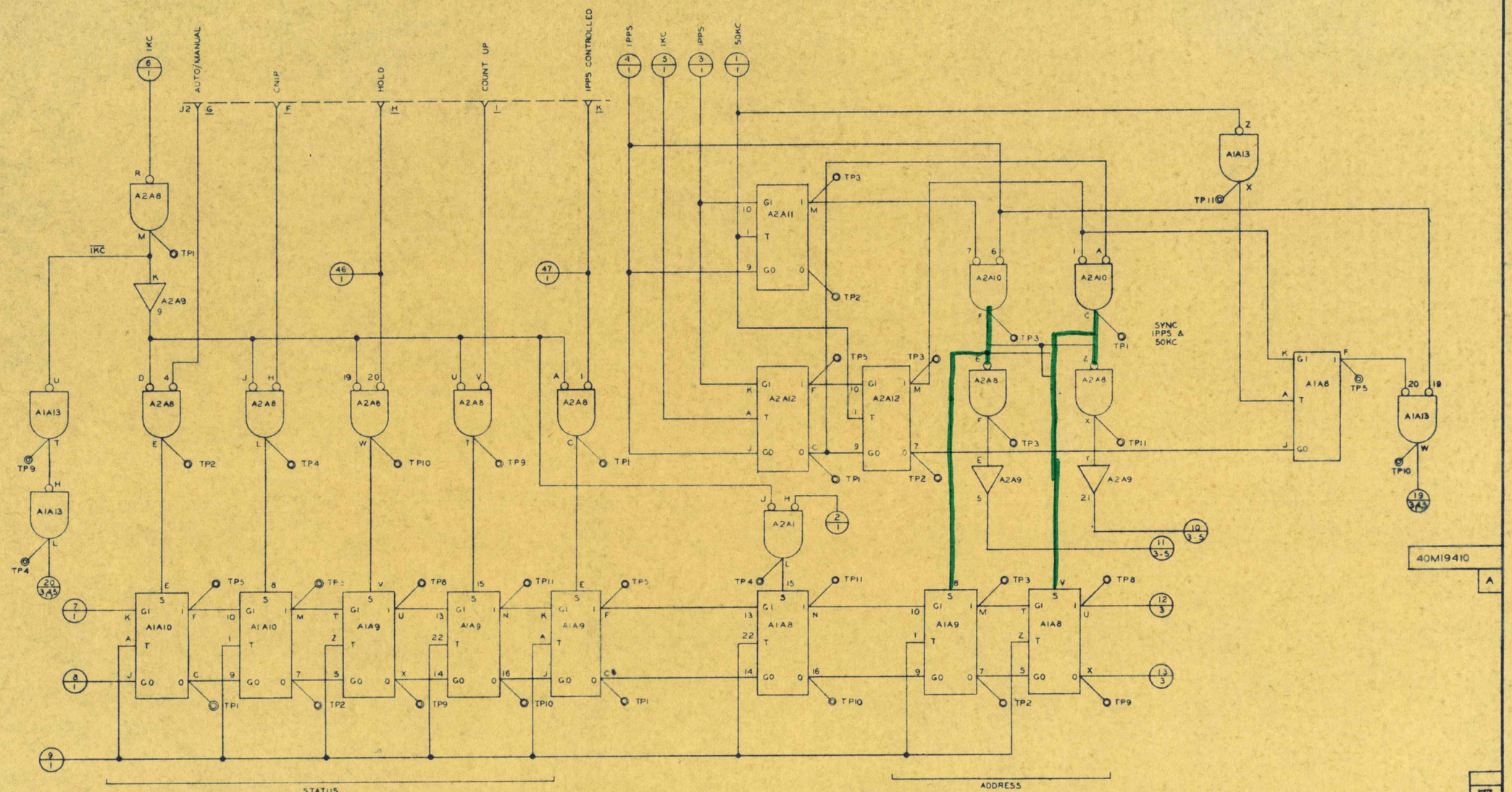


40M08240 E

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING 2 MAY 65	LOGIC DIAGRAM DATA LINK ENCODER COUNT CLOCK TYPE I. SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY USED ON / APPLICATION		APPROVED / DIRECTOR	WEIGHT CHECKER / SCALE / DATE / CODE / UNIT WEIGHT	SIZE D; 40M08240; SHEET 2 OF

NASA FORM 493-C (AUGUST 1966)
NOTICE—UNLESS GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE SPECIFICALLY SET FORTH TO THE CONTRARY, THEY ARE FURNISHED FOR INFORMATION ONLY AND FOR NO OTHER PURPOSE. WHEN SUCH DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT HEREBY DISCLAIMS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
		A	SEE SHEET 1	5-19-67	



SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING FEB 1, 1967	LOGIC DIAGRAM DATA LINK ENCODER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
NEXT ASSY / USED ON: APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	DRAFTSMAN; CHECKER; DESIGNER; SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE; UNIT WEIGHT	SIZE D	40M19410
				SHEET 2 OF	

40M19410 A

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Change Date
26 June 1967

MSFC FORM 465 E (AUGUST 1960)

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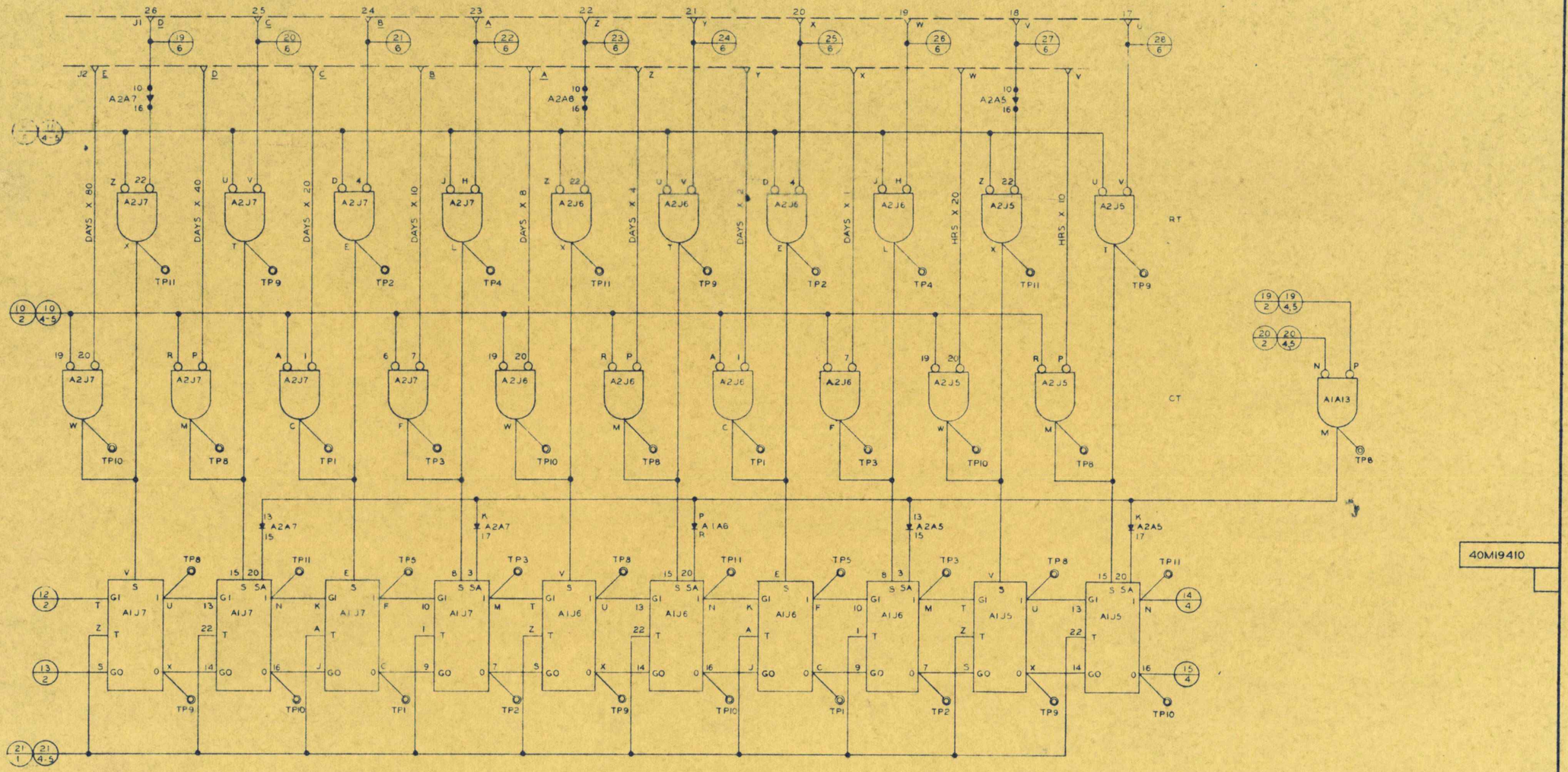
LTR	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL



40MI9410

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING FEB 1 1967	LOGIC DIAGRAM DATA LINK ENCODER COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON: APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE; UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40MI9410 — SHEET 3 OF

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Change Date
26 June 1967

MSFC FORM 428-9 (AUGUST 1960)

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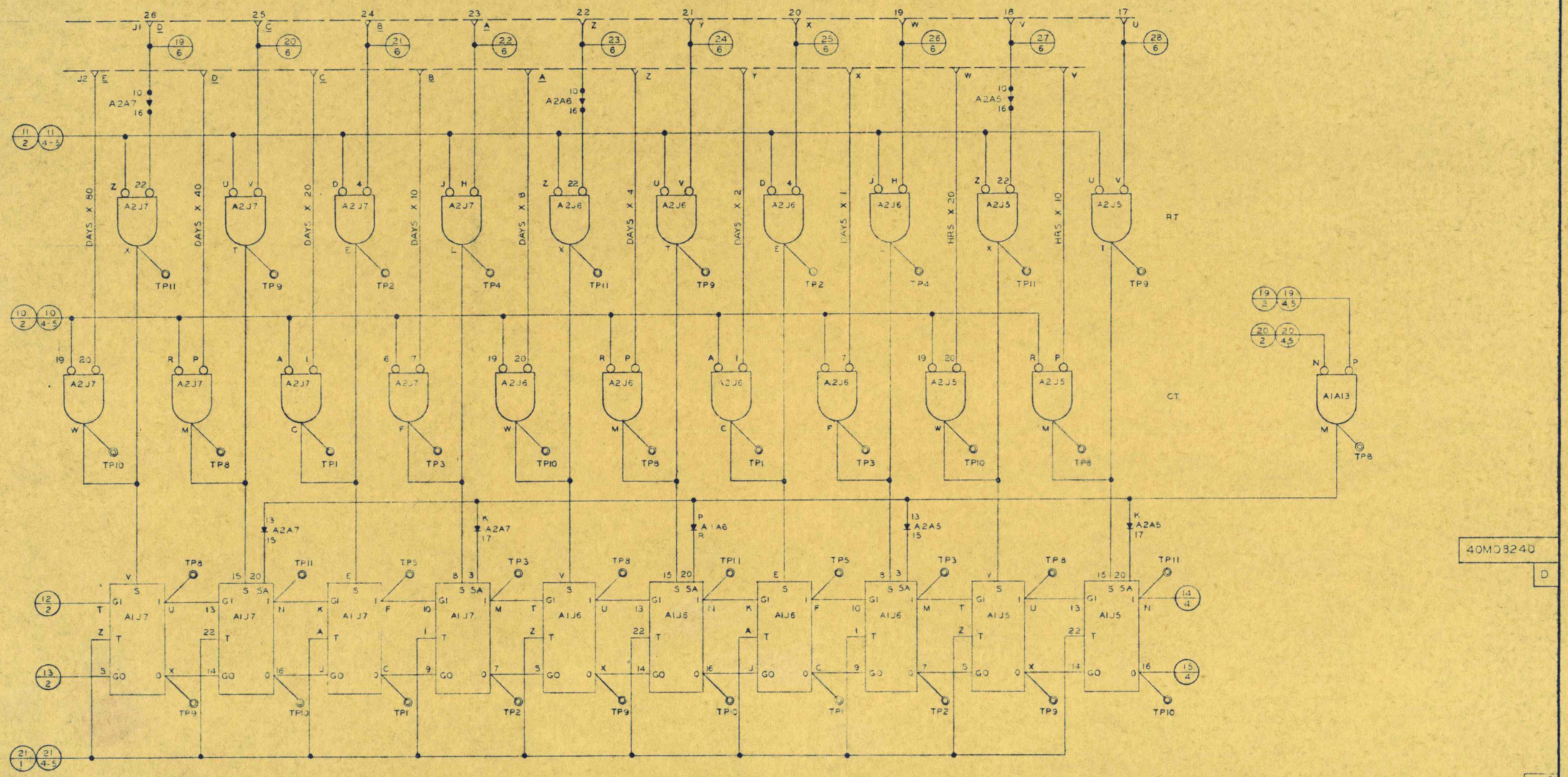
PART NO		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	SEE SHEET ONE	8-27-65	
		B	SEE SHEET ONE	12-9-65	
		C	SEE SHEET ONE	1-3-66	
		D	SEE SHEET ONE	2-7-66	



40M03240
D

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAY 2 65	LOGIC DIAGRAM DATA LINK ENCODER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKER LEAD DESIGNER SUBMITTED APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE SCALE UNIT WEIGHT SHEET 3 OF	DWG SIZE D 40M03240
NEXT ASSY	USED ON	MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH			
APPLICATION					

PSR

COPYMATION, INC. 101-7

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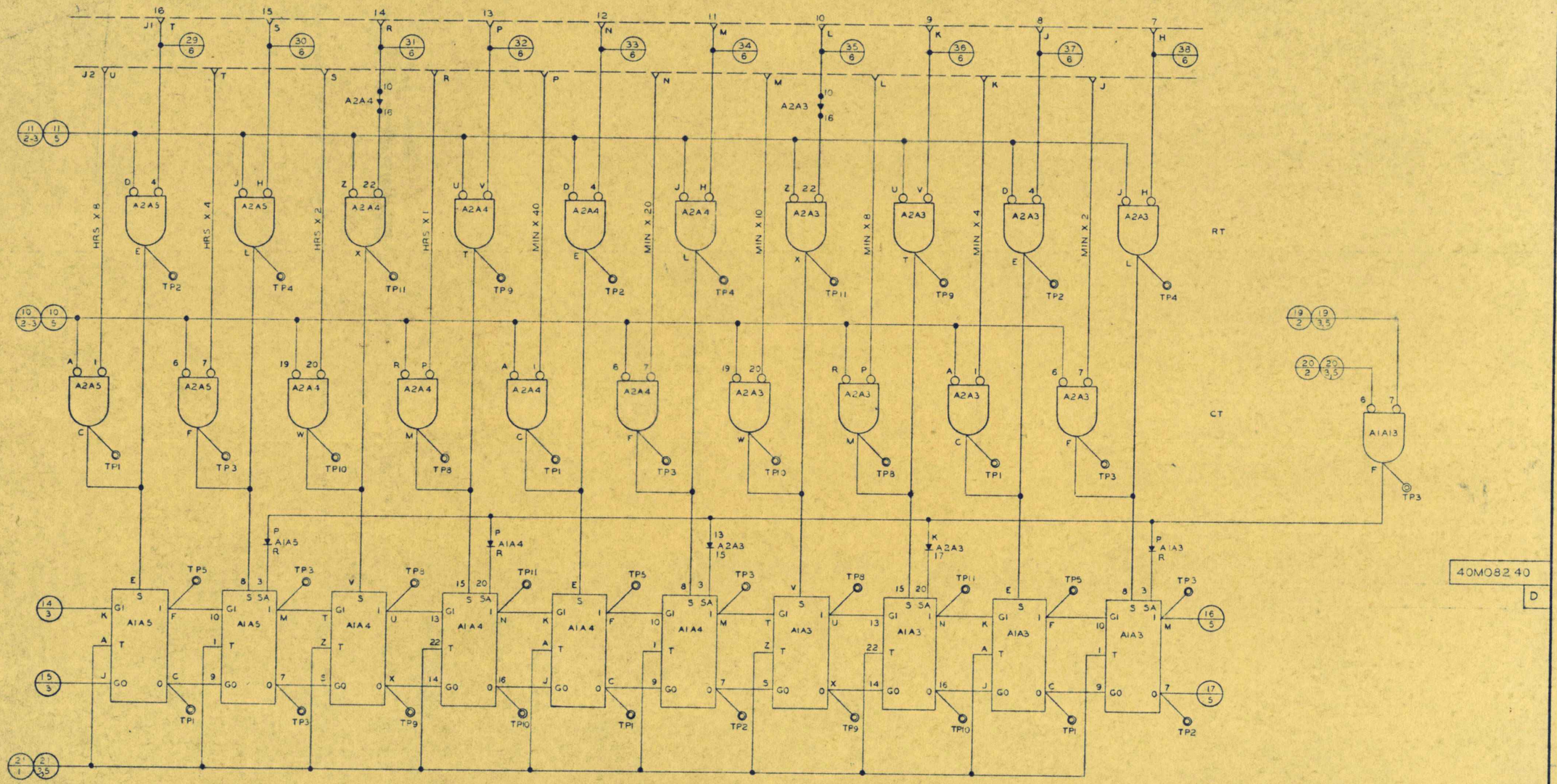
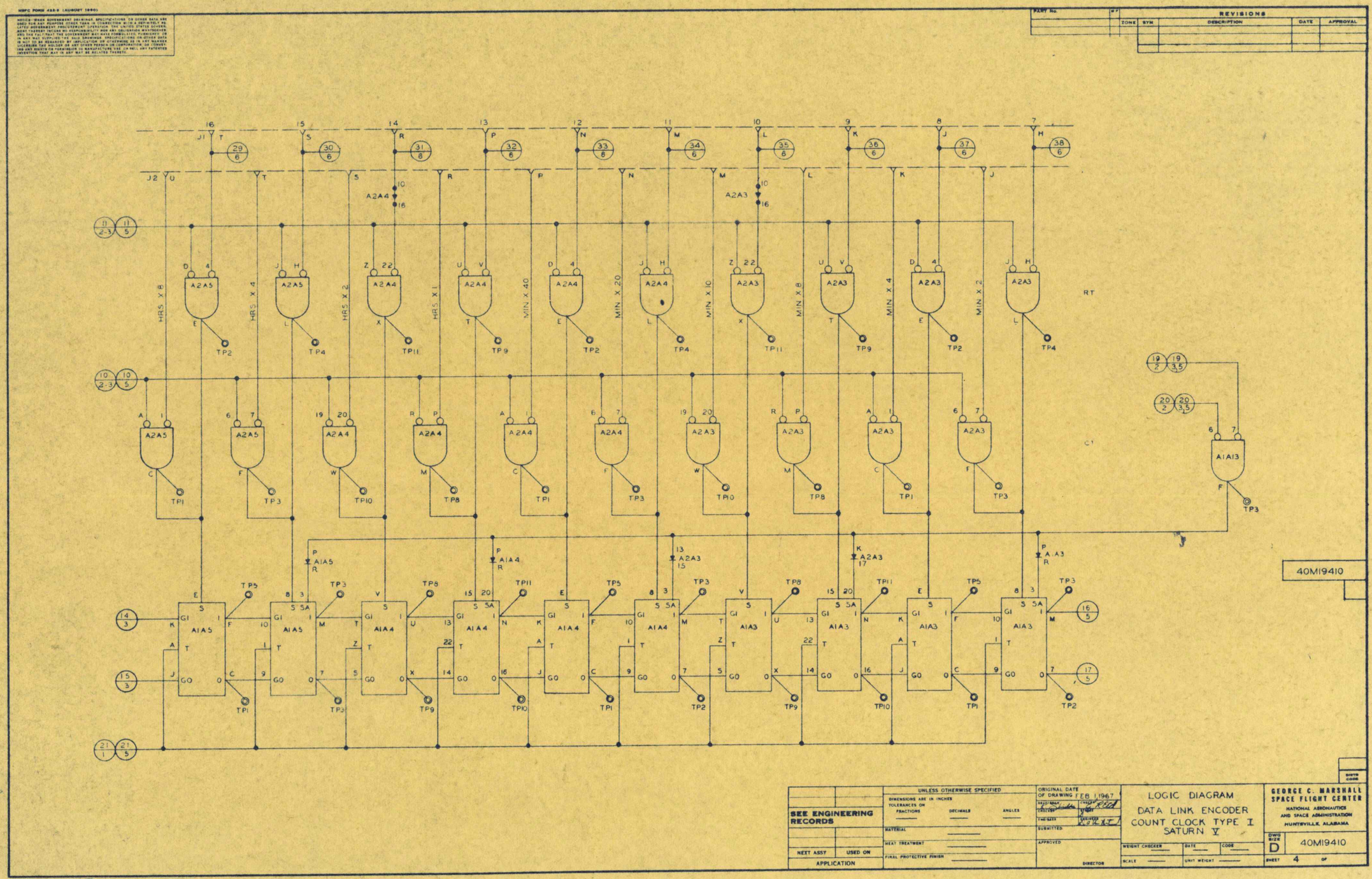
PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	SEE SHEET ONE	9-23-65	
		C	SEE SHEET ONE	12-9-65	
		D	SEE SHEET ONE	2-7-66	

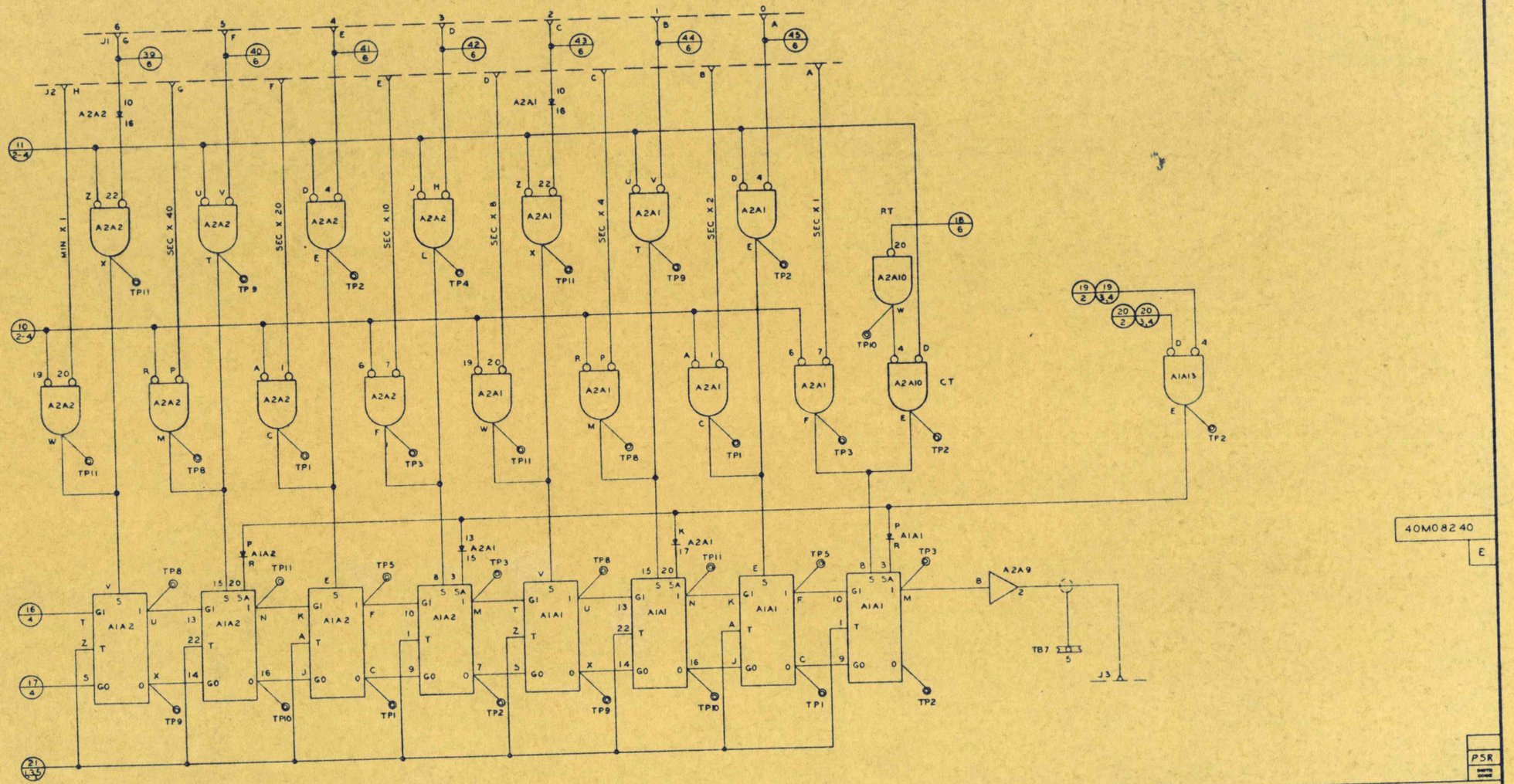


SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING APR 29 '65	LOGIC DIAGRAM DATA LINK ENCODER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	DRAFTSMAN; CHECKER; ENG APPR.; SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE; UNIT WEIGHT	DWG SIZE D; 40M08240; SHEET 4 OF



Change Date
26 June 1967

PART NO	W.T.	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	SEE SHEET ONE	9-23-65	
		C	SEE SHEET ONE	2-9-66	
		D	SEE SHEET ONE	2-8-66	
		E	SEE SHEET ONE	8-1-66	



40M08240
E

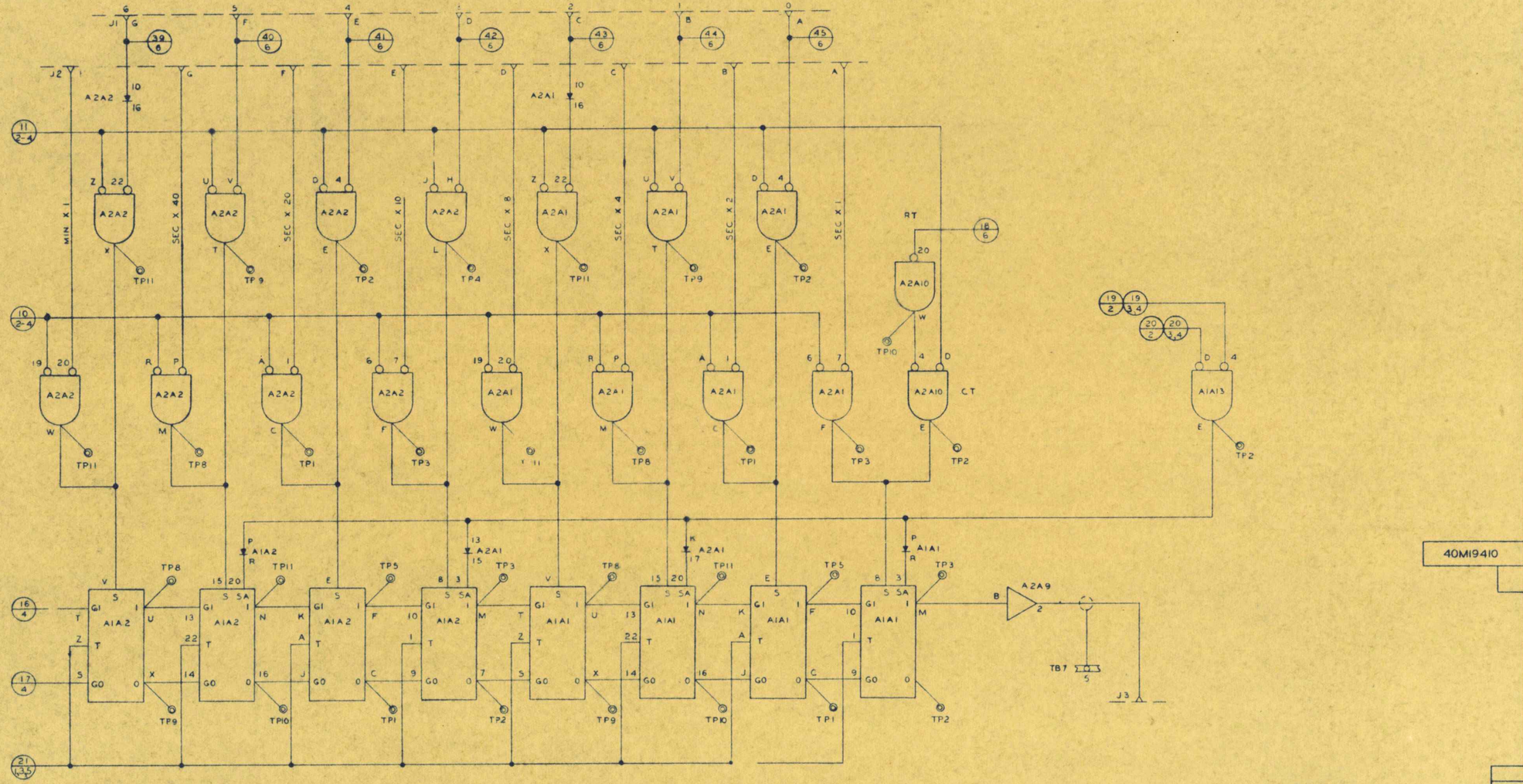
		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APR. 29, 65	LOGIC DIAGRAM DATA LINK ENCODER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	DRAWN J. ANST; CHECKED L. BROWN; ENGINEER C. DAVIES; SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKED, DATE, CODE; SCALE, UNIT WEIGHT	SIZE D; 40M08240; SHEET 5 OF
NEXT ASSY	USED ON	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH			
APPLICATION					

P5R

MSFC FORM 422 S (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.		REVISIONS			
	ZONE	SYM.	DESCRIPTION	DATE	APPROVAL



40MI9410

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING FEB 1, 1967	LOGIC DIAGRAM DATA LINK ENCODER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	DESIGNED / CHECKED / ENGINEER / SUBMITTED / APPROVED / DIRECTOR	WEIGHT CHECKER / SCALE / DATE / UNIT WEIGHT / CODE	SIZE D	DWG 40MI9410 SHEET 5 OF

PART No.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
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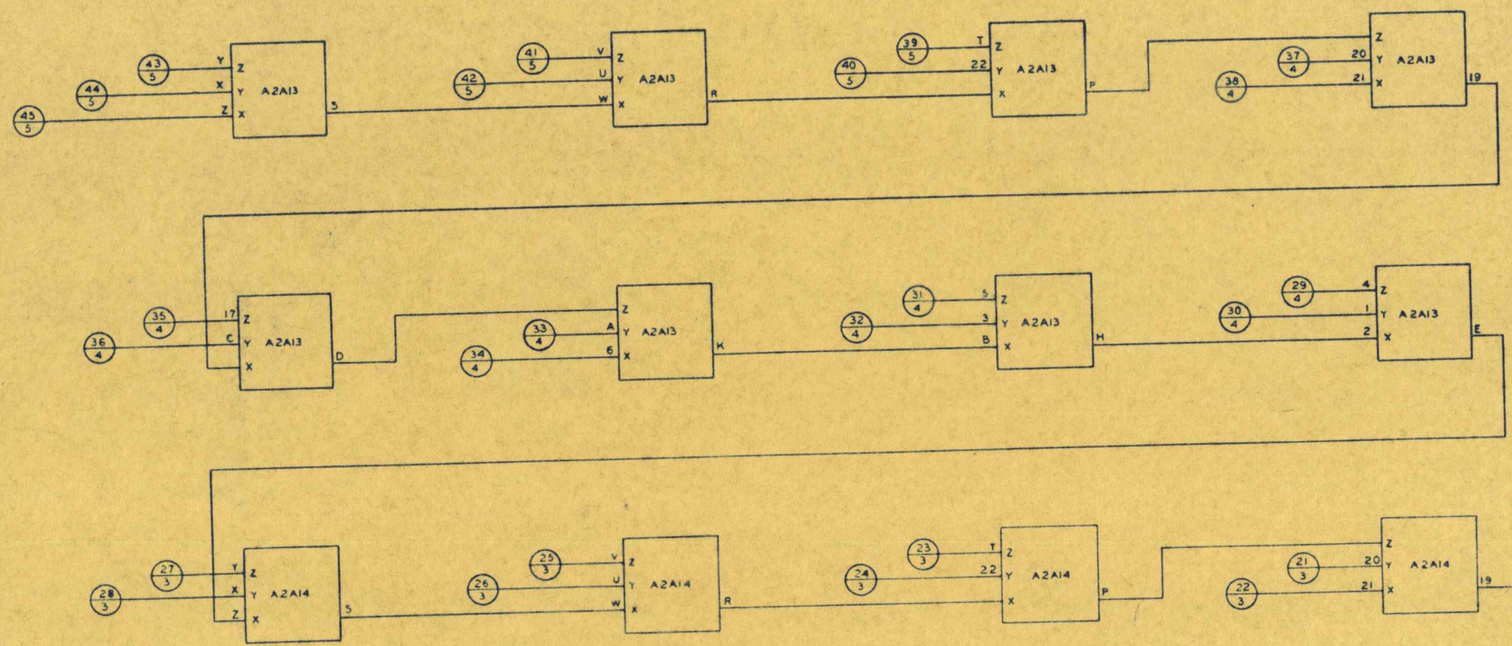
		E	SEE SHEET ONE	8-1-66	



40M08240

E

P5R

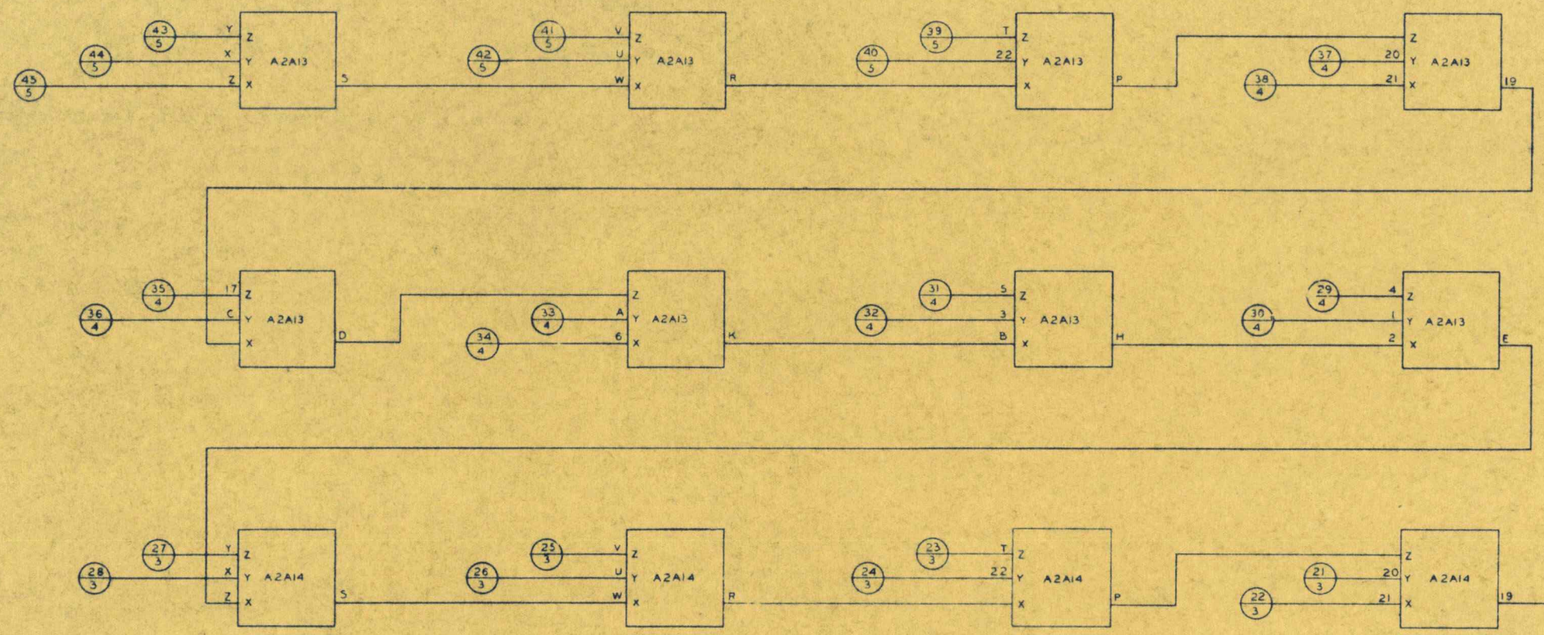
		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING DEC. 9 1965	LOGIC DIAGRAM DATA LINK ENCODER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKER		SIZE D 40M08240
		MATERIAL	CHECKER STRESS		
		HEAT TREATMENT	ENGINEER ENGINEER		
NEXT ASSY	USED ON	FINAL PROTECTIVE FINISH	SUBMITTED		
APPLICATION			APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE	SHEET 6 OF 6
				SCALE UNIT WEIGHT	

Change Date
30 November, 1966

MSFC FORM 482-S (AUGUST 1960)

NOTICE — WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

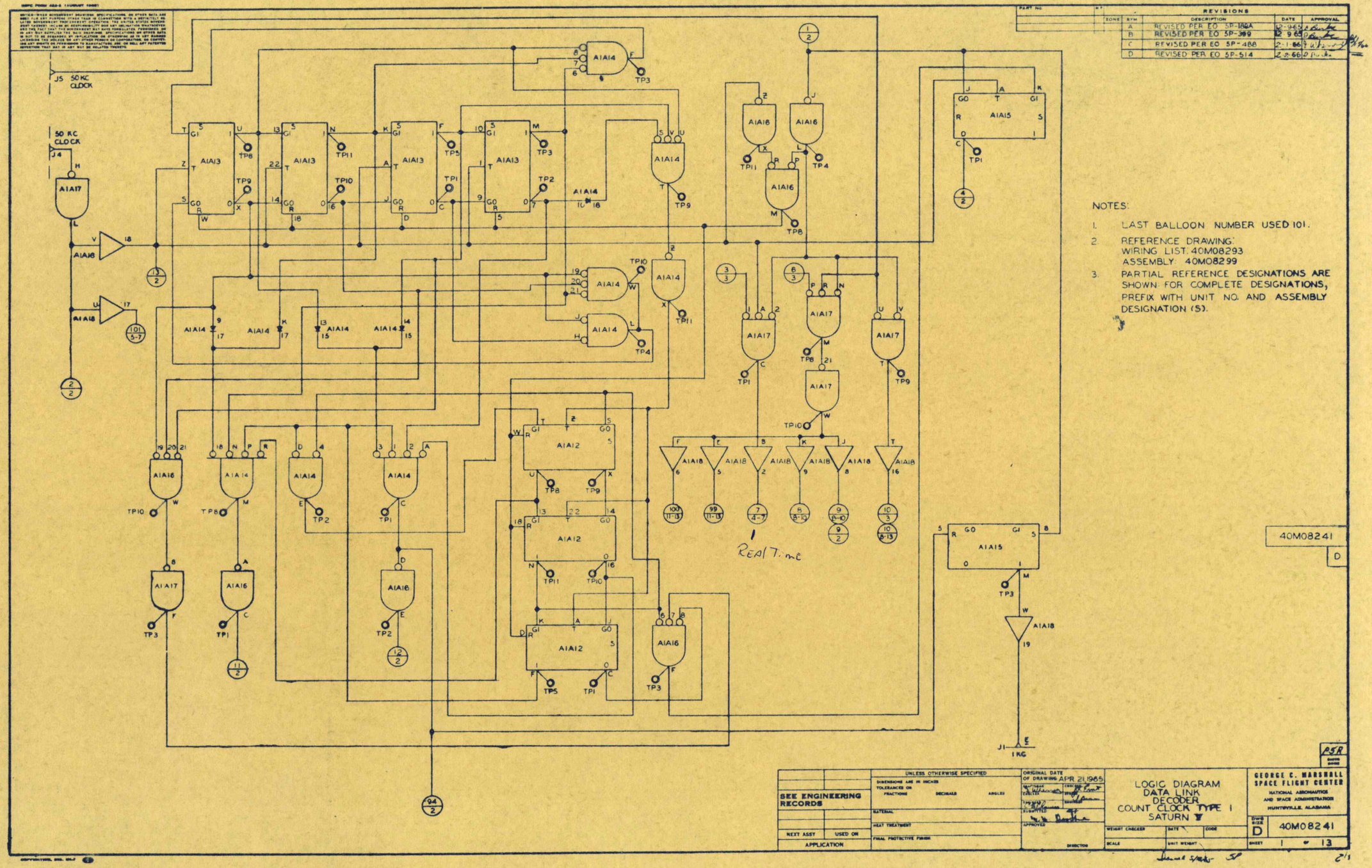
PART No.	M.F.	REVISIONS			
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL
					8-1-66	



40M19410

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS — DECIMALS — ANGLES; MATERIAL; HEAT TREATMENT; FINISH, PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING FEB 1 1967; DRAWN; CHECKED; STRESS; ENGINEER; SUBMITTED; APPROVED; DIRECTOR	LOGIC DIAGRAM DATA LINK ENCODER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
NEXT ASSY — USED ON; APPLICATION		WEIGHT CHECKED — DATE — CODE; SCALE — UNIT WEIGHT		DWG SIZE D	40M19410
				SHEET 6 OF 6	

Change Date
26 June 1967



REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
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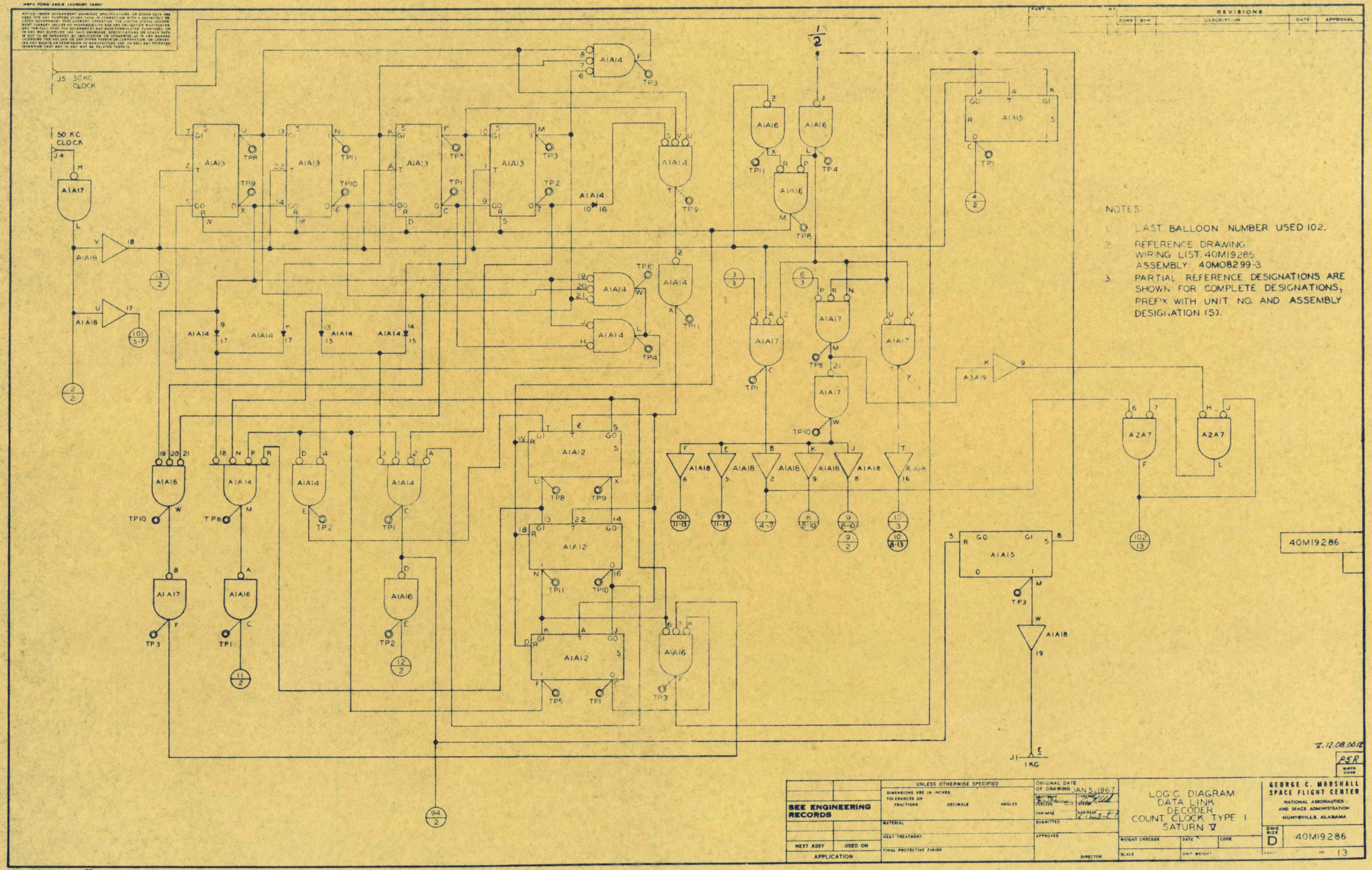
B	REVISED PER EO 5P-389	12 9 65	
C	REVISED PER EO 5P-488	2-1-66	
D	REVISED PER EO 5P-514	2-2-66	

NOTES:

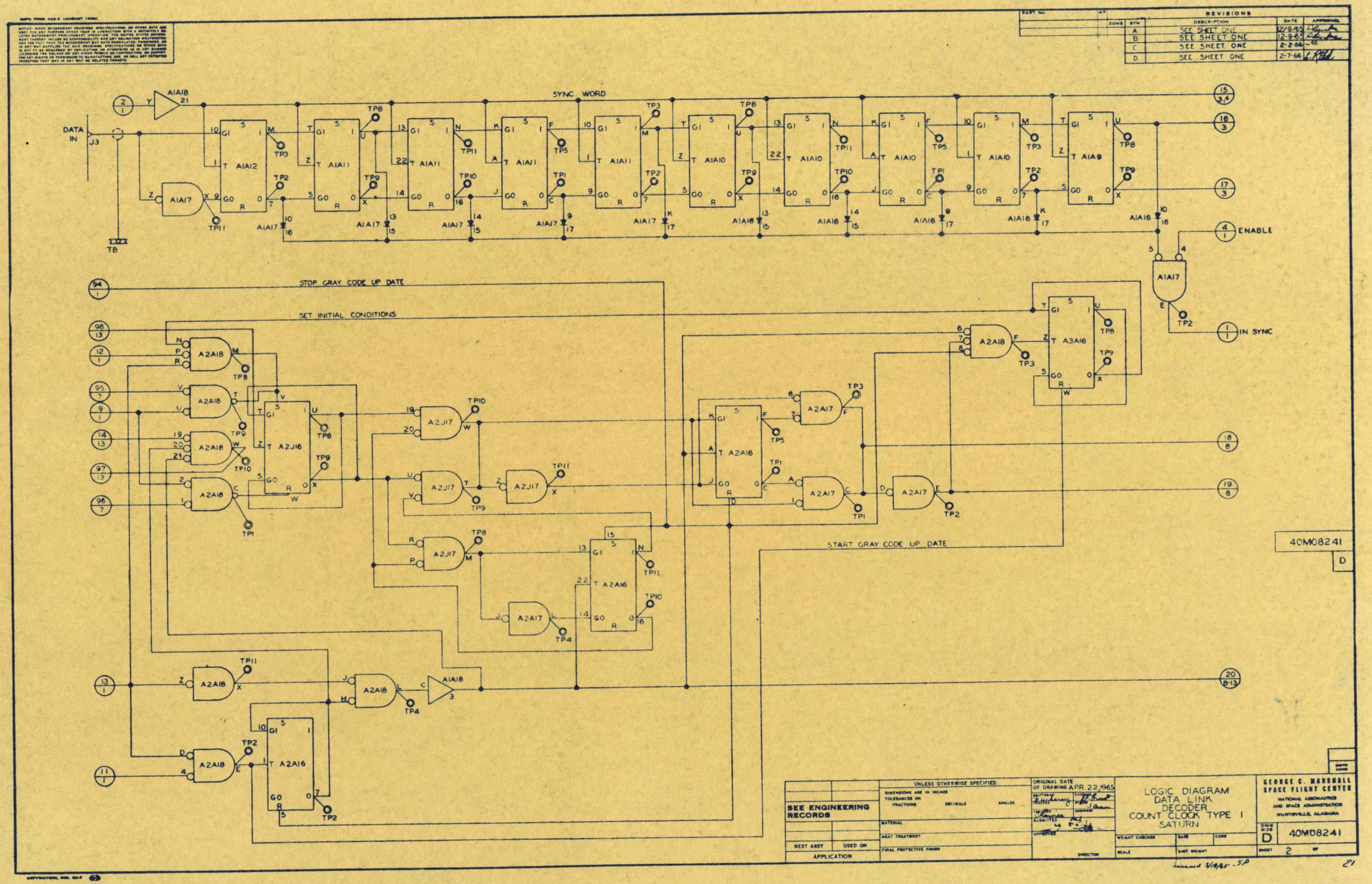
1. LAST BALLOON NUMBER USED 101.
2. REFERENCE DRAWING:
   WIRING LIST: 40M08293
   ASSEMBLY: 40M08299
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATIONS, PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION (S).

40M08241 D

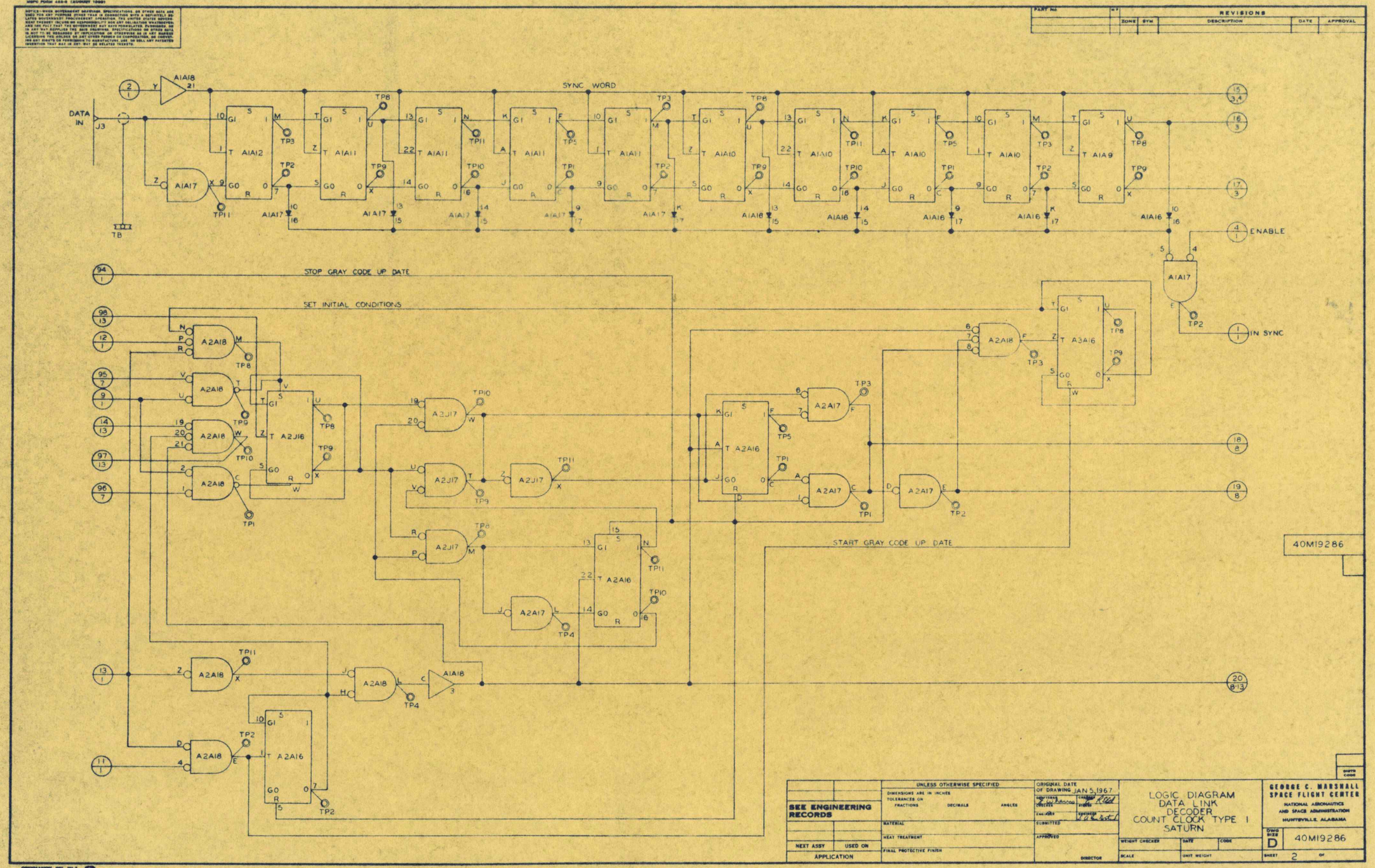
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APR 21 1965	LOGIC DIAGRAM DATA LINK DECODER COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED; DIRECTOR	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
		WEIGHT CHECKED / DATE / CODE; SCALE / UNIT WEIGHT	SIZE D; 40M08241; SHEET 1 OF 13



Change Date
26 June 1967



Change Date
30 November, 1966



PART No.	QTY	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

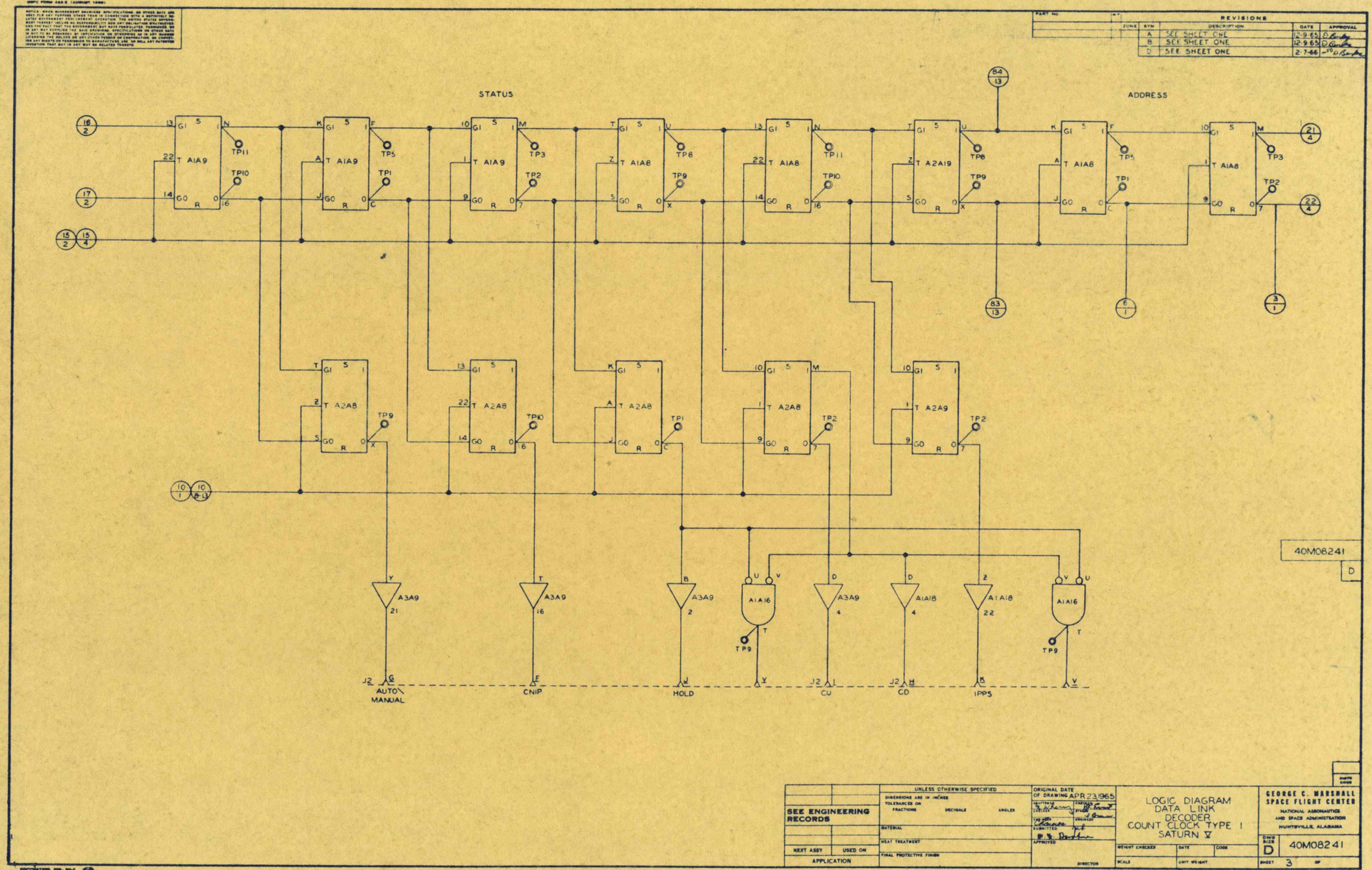
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING JAN 5, 1967	LOGIC DIAGRAM DATA LINK DECODER COUNT CLOCK TYPE I SATURN
NEXT ASSY / USED ON	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT
APPLICATION			

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

Dwg Size D — 40M19286 — SHEET 2 OF

40M19286

Change Date
26 June 1967

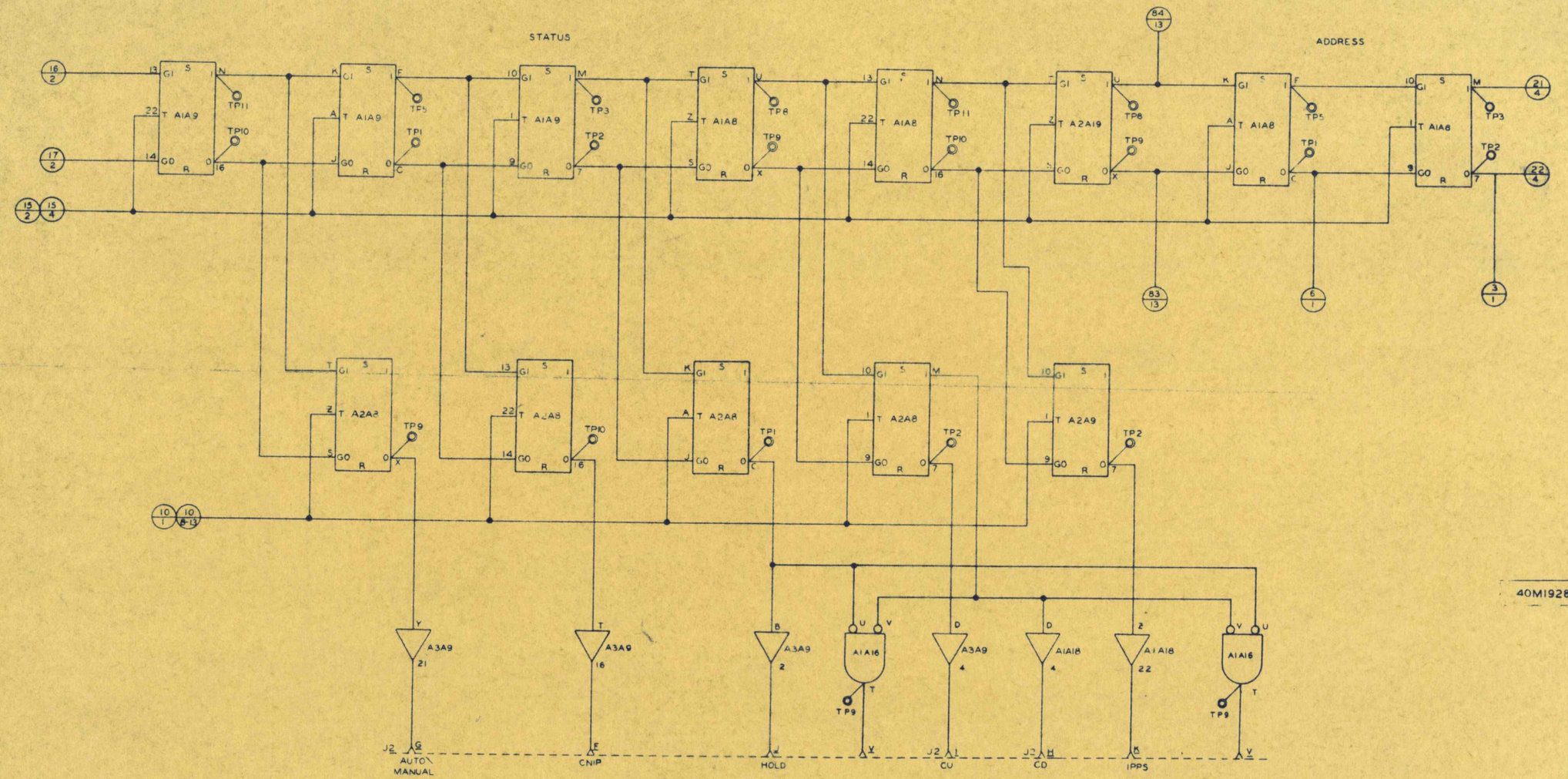


Change Date
30 November, 1966

MSFC FORM 488-S (AUGUST 1966)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT HEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

PART No.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



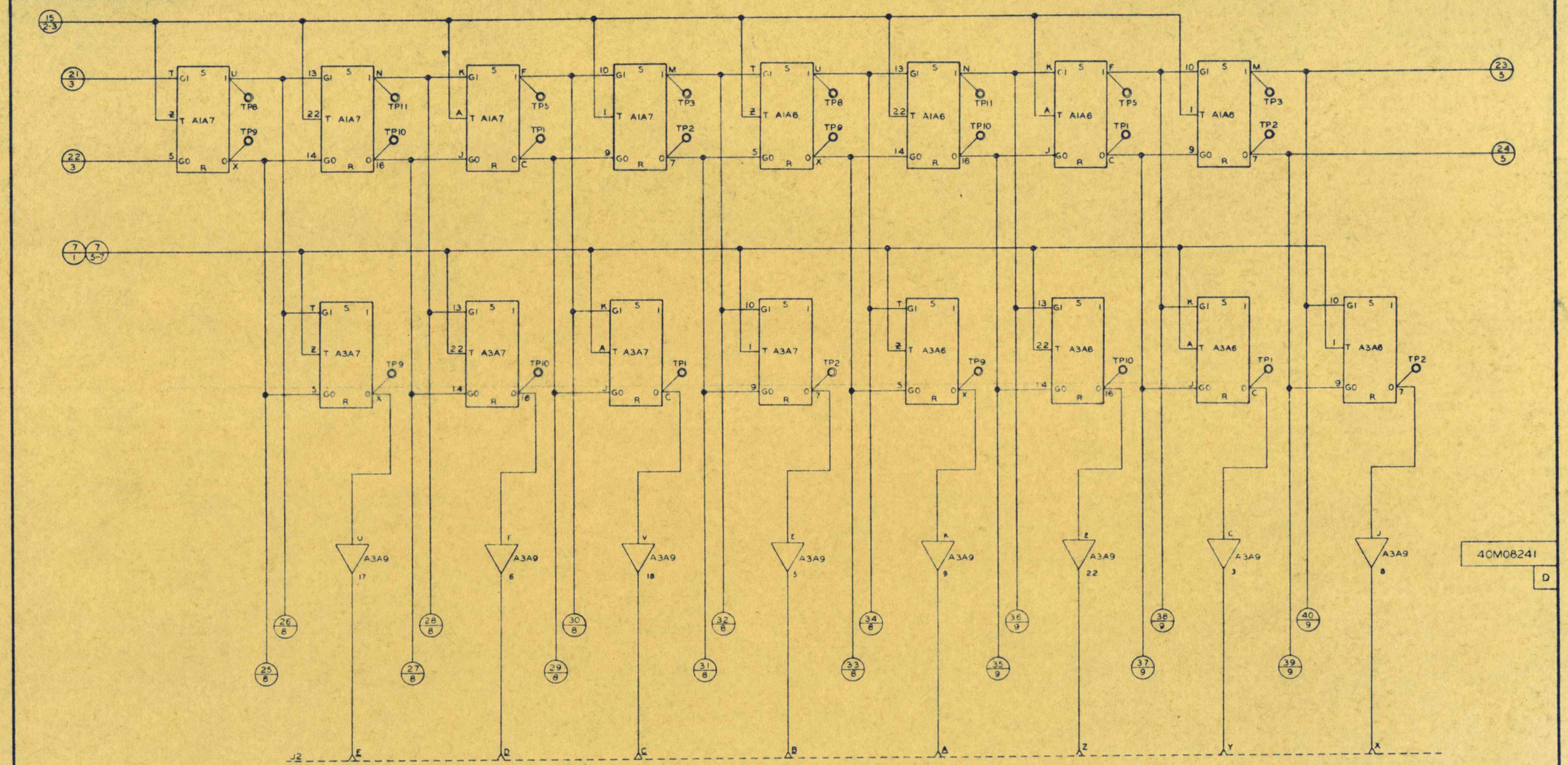
40M19286

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING JAN 5 1967	LOGIC DIAGRAM DATA LINK DECODER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES			SIZE D 40M19286
		MATERIAL			
NEXT ASSY	USED ON	HEAT TREATMENT			
APPLICATION		FINAL PROTECTIVE FINISH	APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE	SHEET 3 OF
				SCALE UNIT WEIGHT	

COPYMATION, INC. NY-7

Change Date
26 June 1967

PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		B	SEE SHEET ONE	12-9-65	
		D	SEE SHEET ONE	2-7-66	

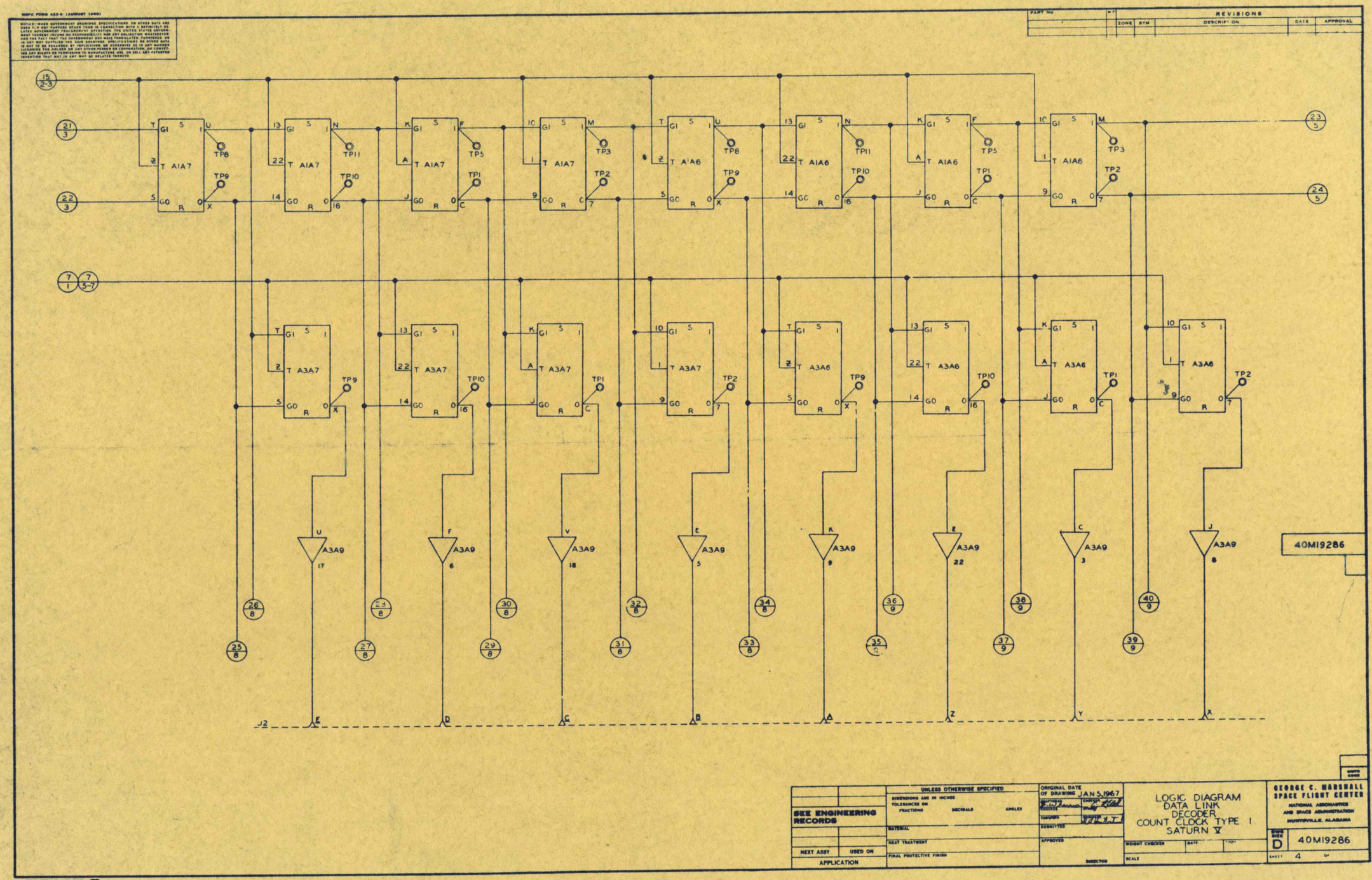


SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APR 26 1965	LOGIC DIAGRAM DATA LINK DECODER COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	DRAFTSMAN; CHECKED; ENGINEER; SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE; UNIT WEIGHT

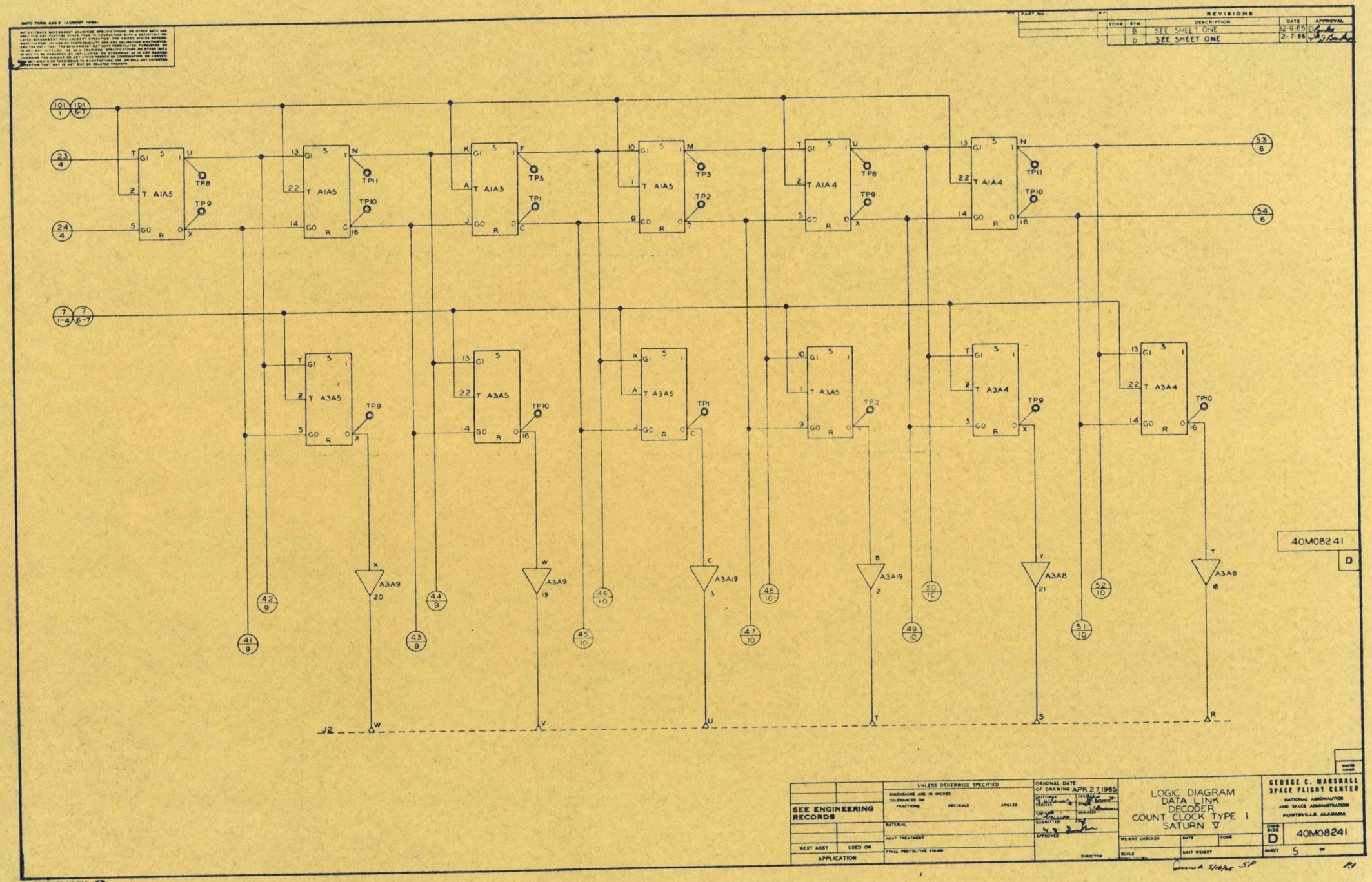
GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE ALABAMA

DWG SIZE D — 40M08241 — SHEET 4 OF 21

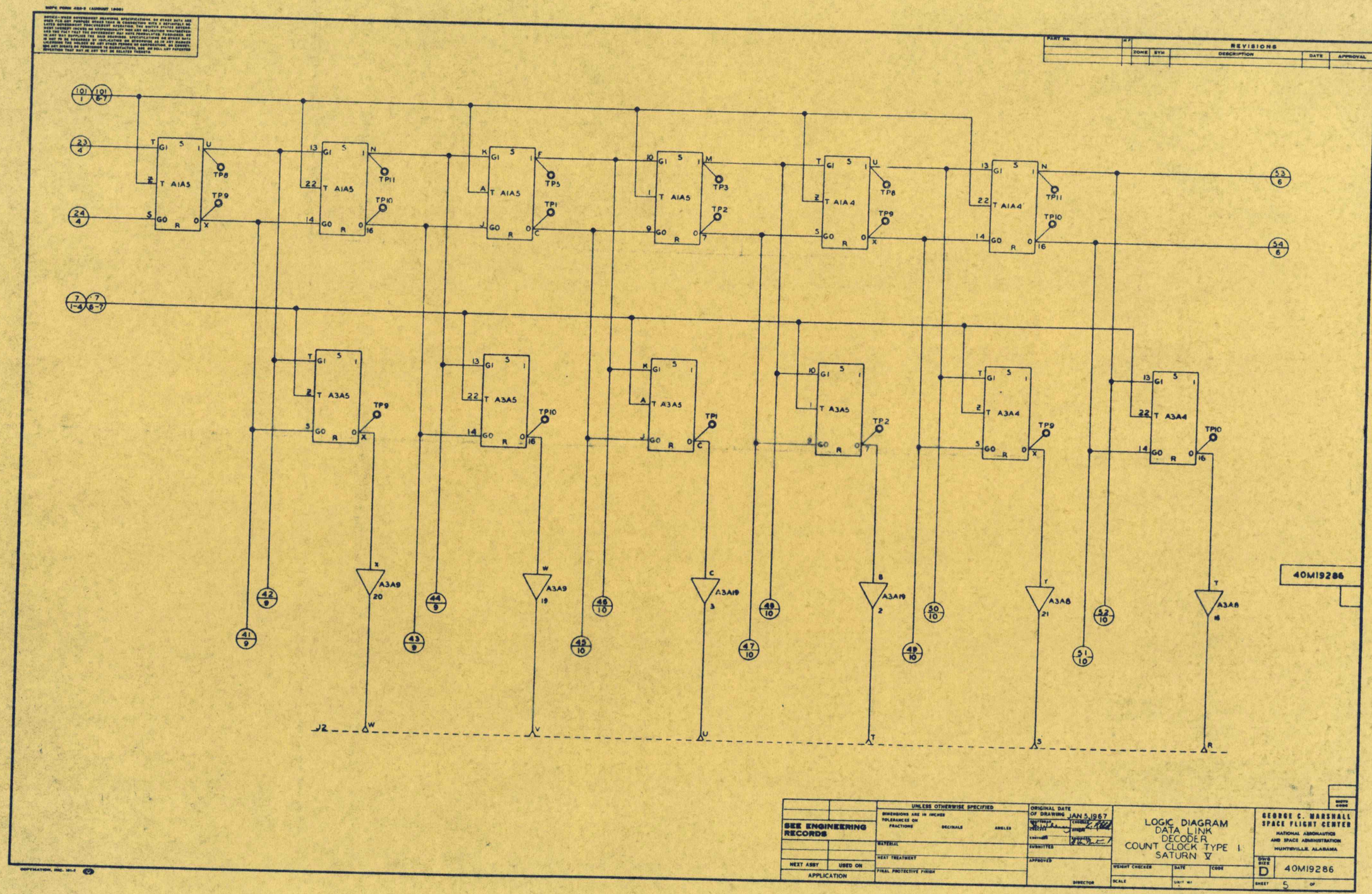
40M08241 D



Change Date
26 June 1967

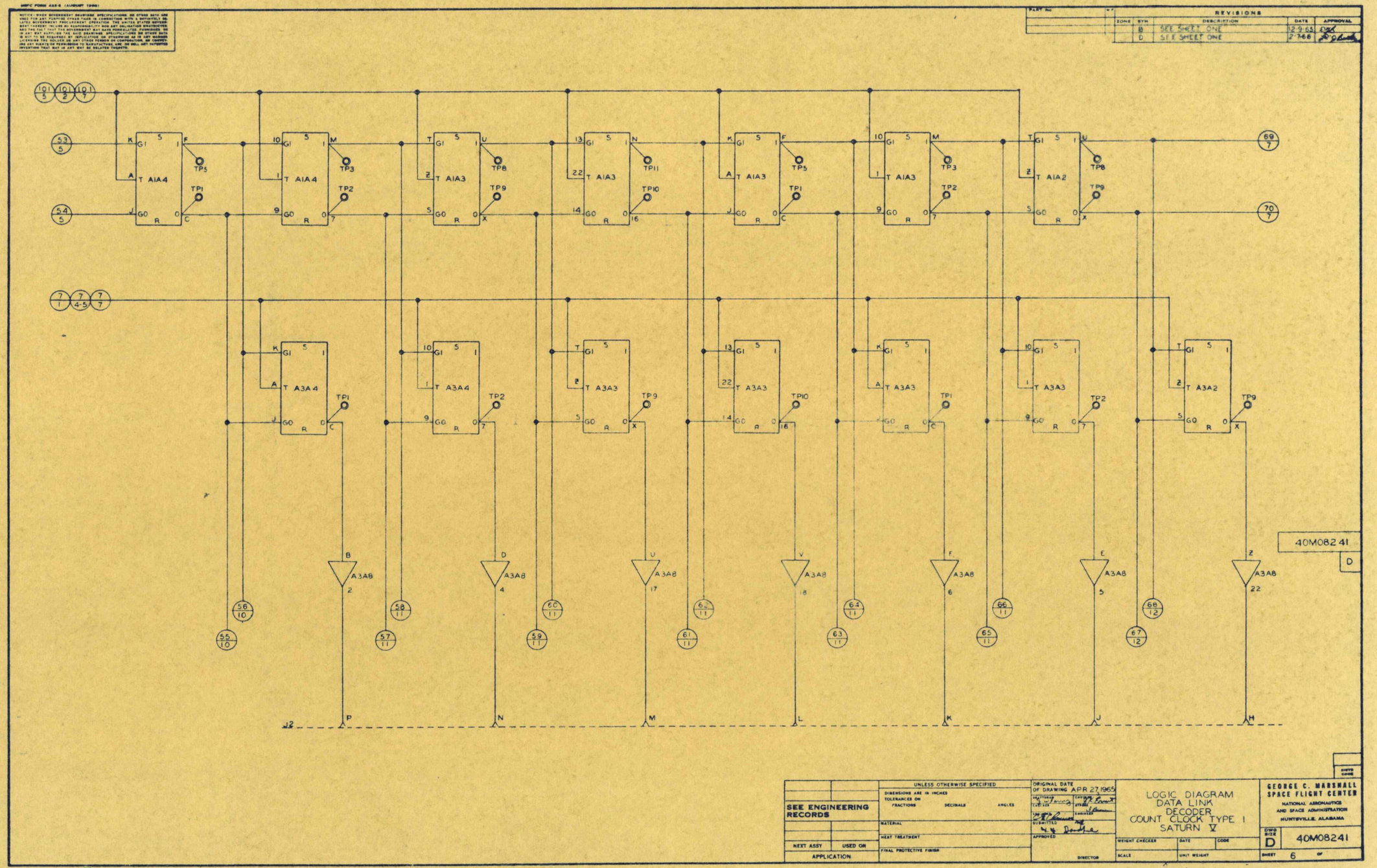


Change Date
30 November, 1966



UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING JAN 5 1967	LOGIC DIAGRAM DATA LINK DECODER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	CHECKED		DWG SIZE D 40M19286
MATERIAL	STRESS		
HEAT TREATMENT	SUBMITTED		
FINAL PROTECTIVE FINISH	APPROVED		
SEE ENGINEERING RECORDS	DIRECTOR	WEIGHT CHECKED DATE CODE	SHEET 5 OF
NEXT ASSY USED ON APPLICATION		SCALE UNIT WT	

Change Date
26 June 1967

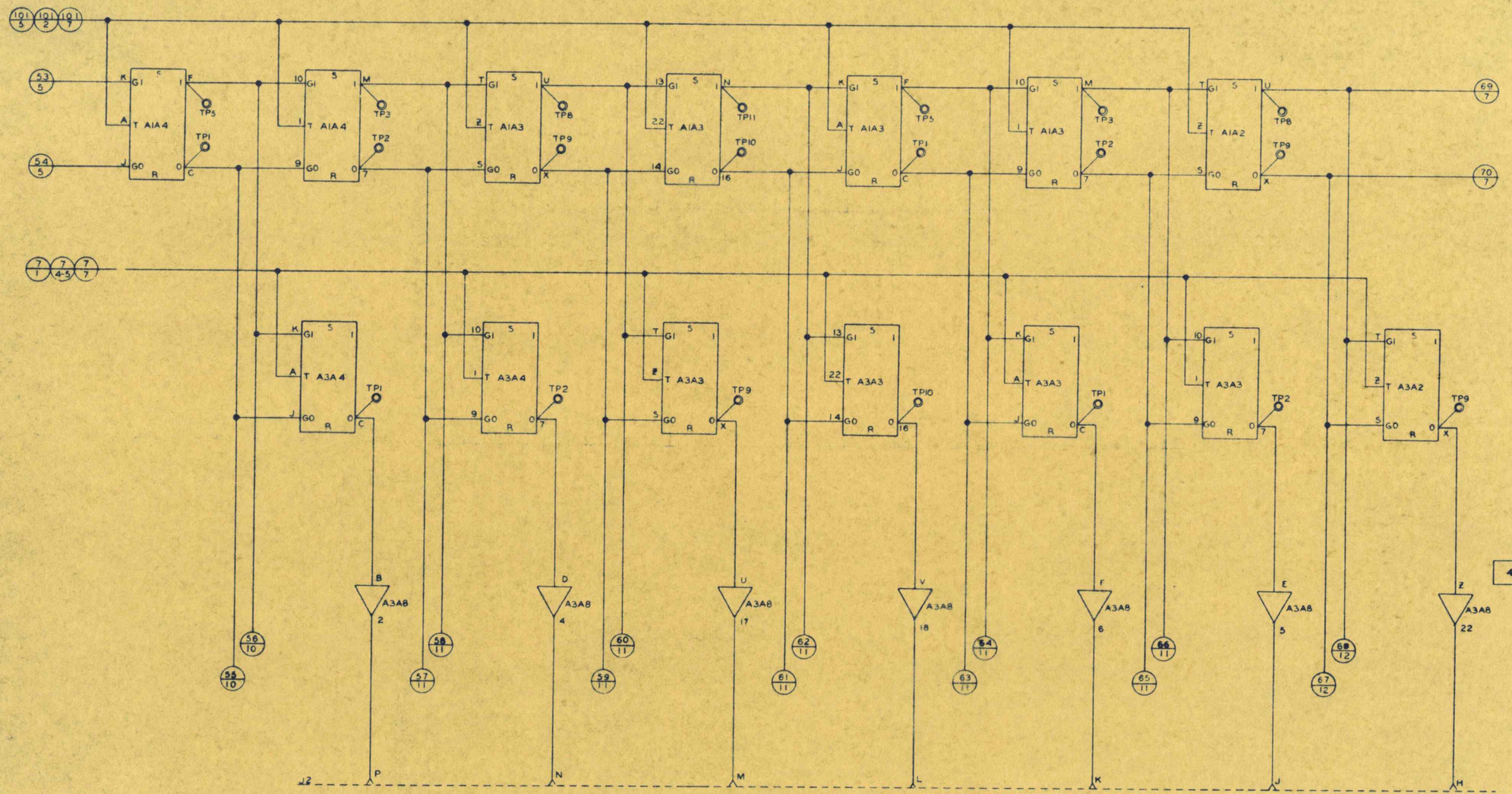


Change Date
30 November, 1966

MSFC FORM 433-6 (AUGUST 1966)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO	W P	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M19286

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING JAN 5 1967	LOGIC DIAGRAM DATA LINK DECODER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON	MATERIAL	SUBMITTED		SIZE D
APPLICATION	HEAT TREATMENT	APPROVED		40M19286
	FINAL PROTECTIVE FINISH	DIRECTOR	WEIGHT CHECKED / DATE / CODE	SHEET 6 OF
			SCALE / UNIT WEIGHT	

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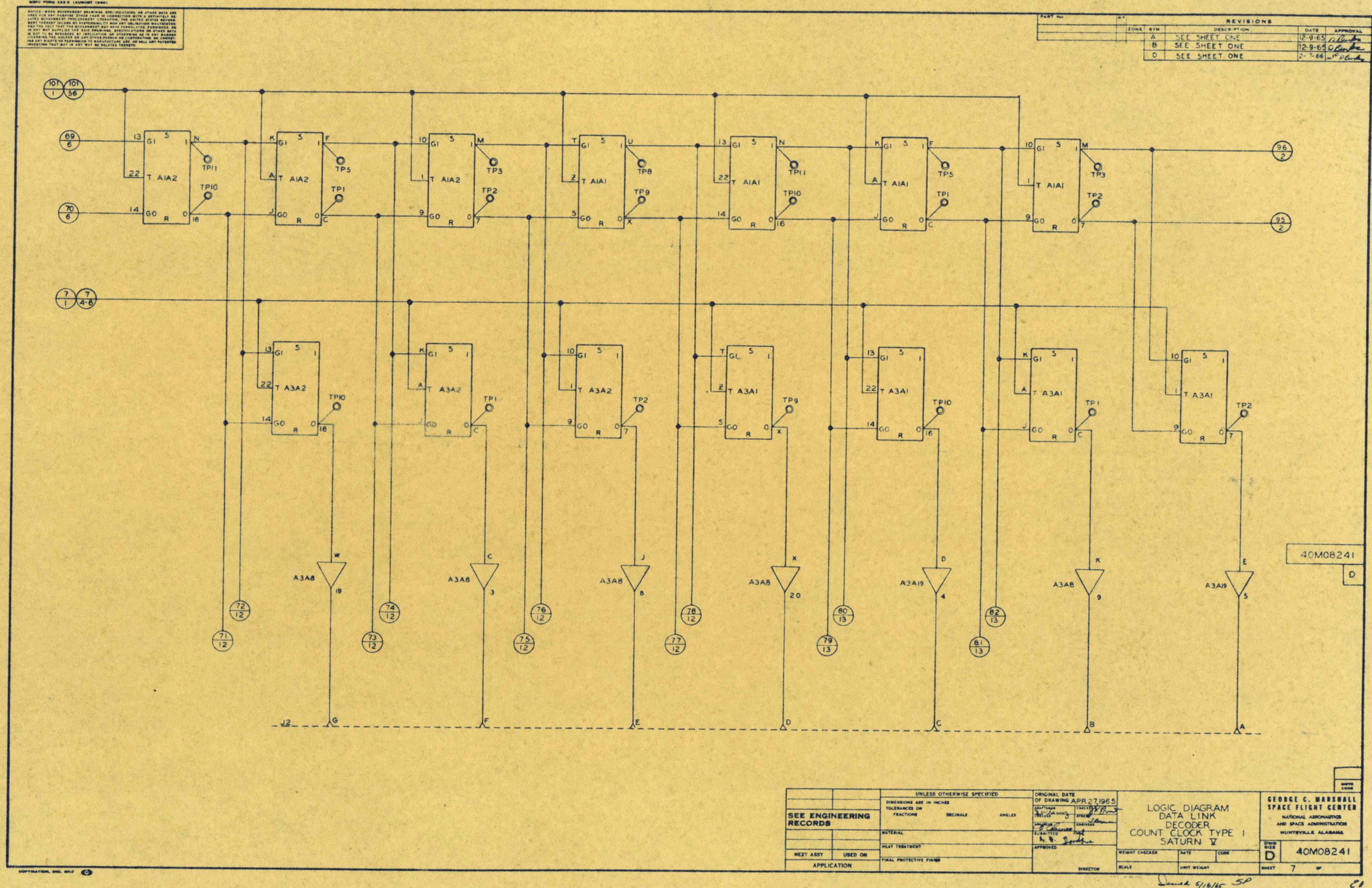
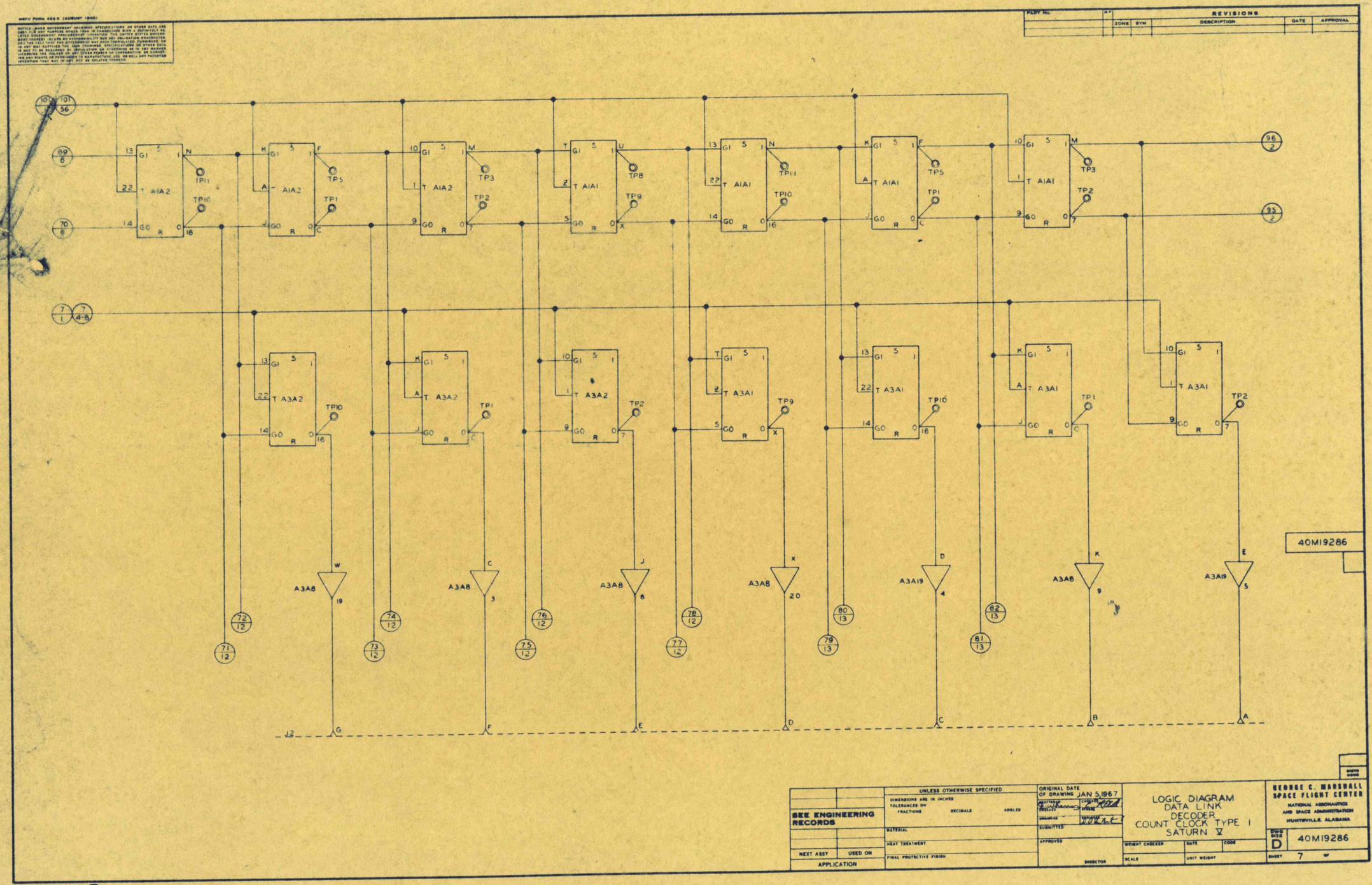
Change Date
26 June 1967



Change Date
30 November, 1966



Change Date
26 June 1967

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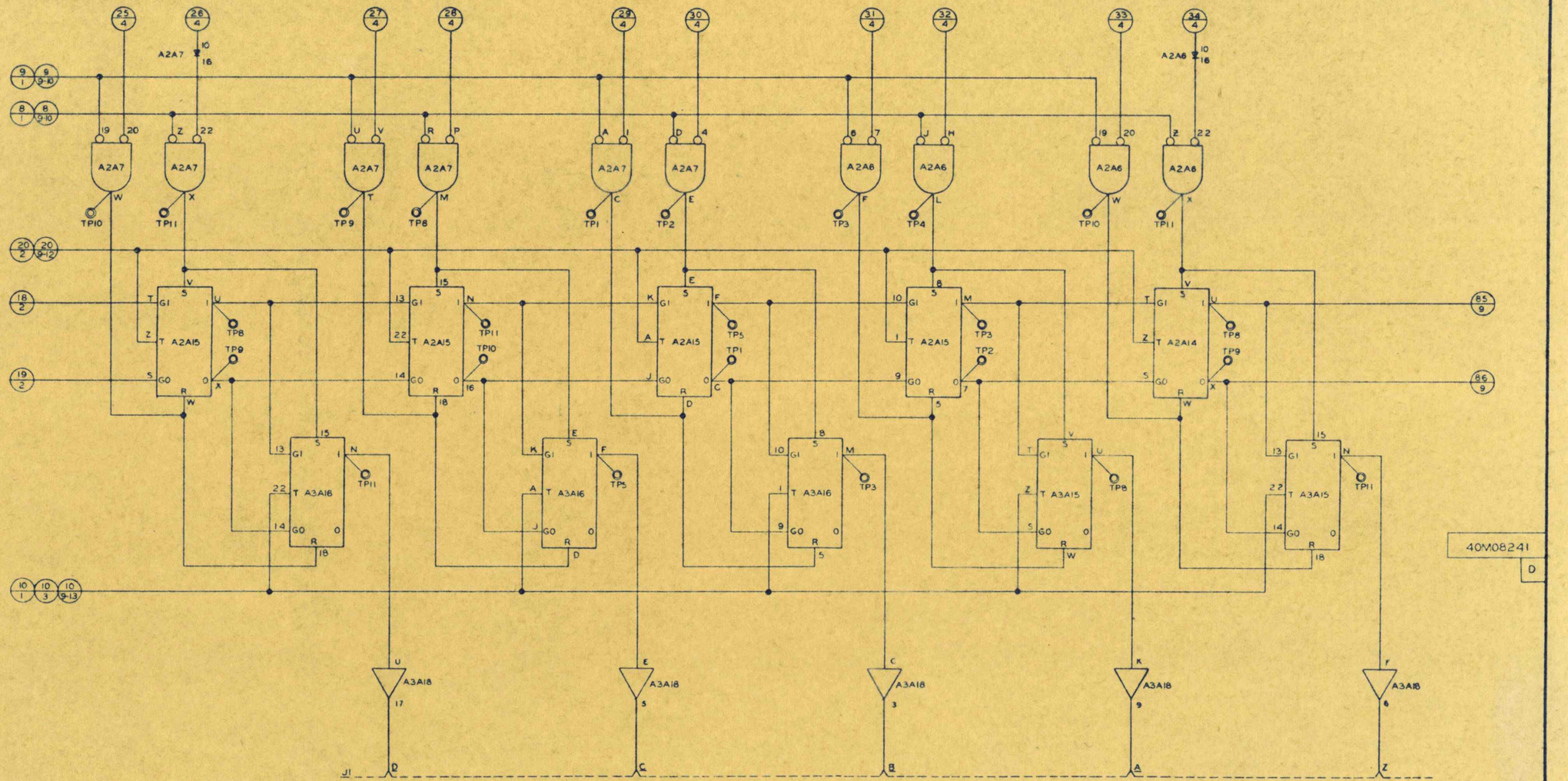
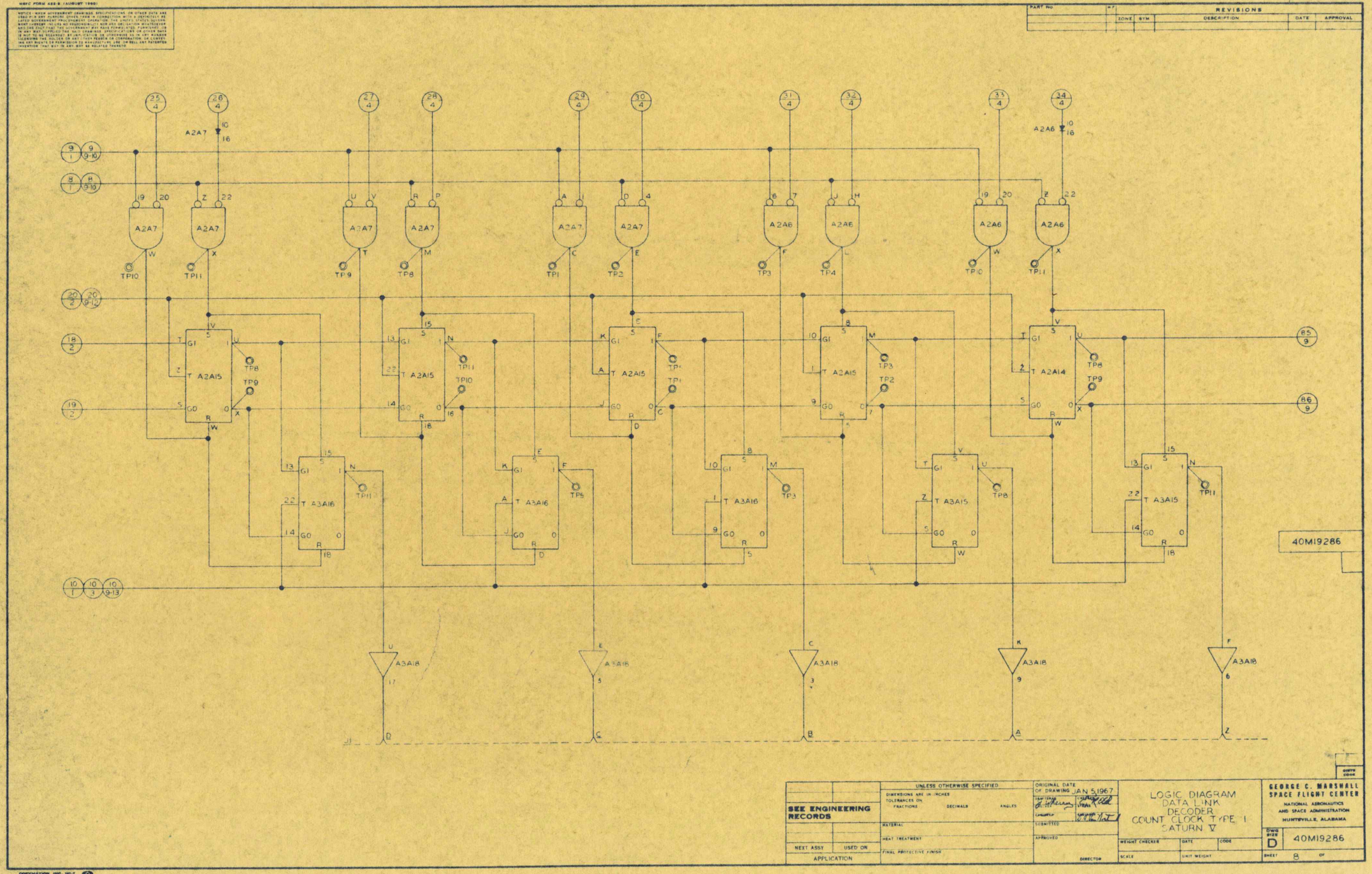
REVISIONS			
ZONE	BTH	DESCRIPTION	DATE	APPROVAL
	A	SEE SHEET ONE	12-9-65	
	B	SEE SHEET ONE	12-9-65	
	D	SEE SHEET ONE	2-7-66	



SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH; NEXT ASSY, USED ON, APPLICATION	ORIGINAL DATE OF DRAWING APR 28 1965; DRAFTING SUPV., CHECKER, ENGINEER, SUBMITTED, APPROVED, DIRECTOR	LOGIC DIAGRAM DATA LINK DECODER COUNT CLOCK TYPE I SATURN V; WEIGHT CHECKER, DATE, CODE, SCALE, UNIT WEIGHT	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA; SIZE D; 40M08241; SHEET 8 OF

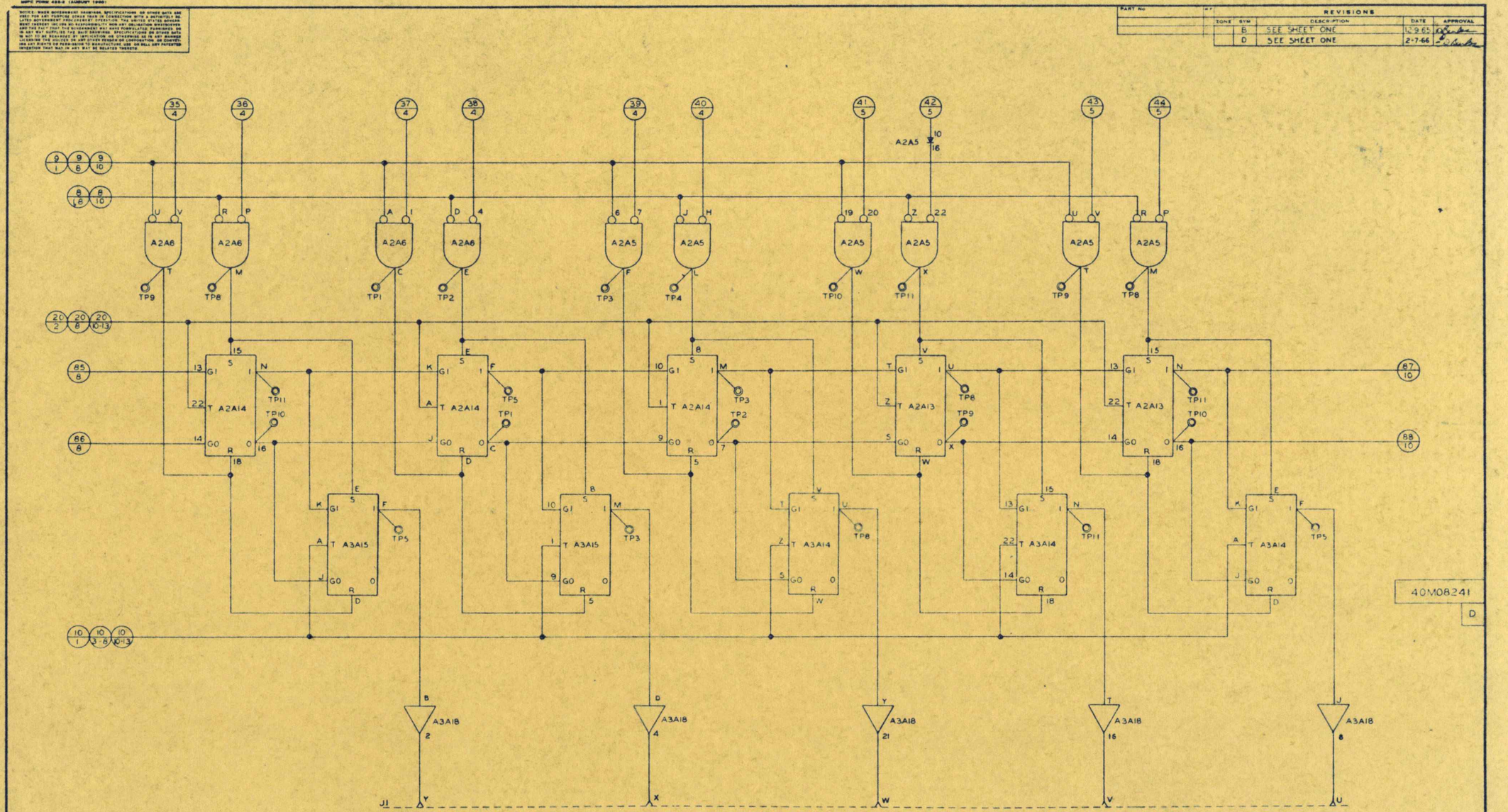


Change Date
26 June 1967

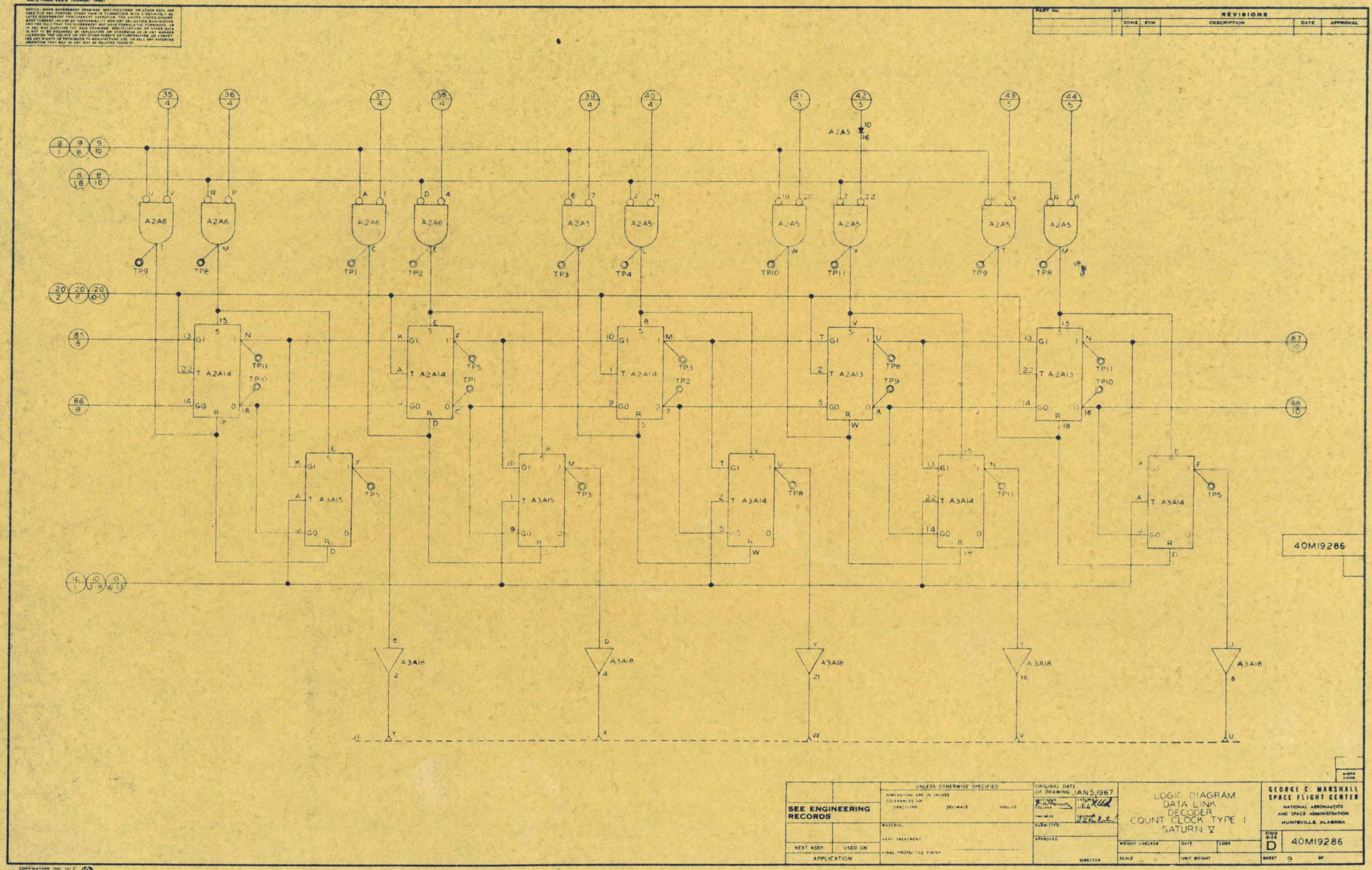
MSFC FORM 488-2 (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

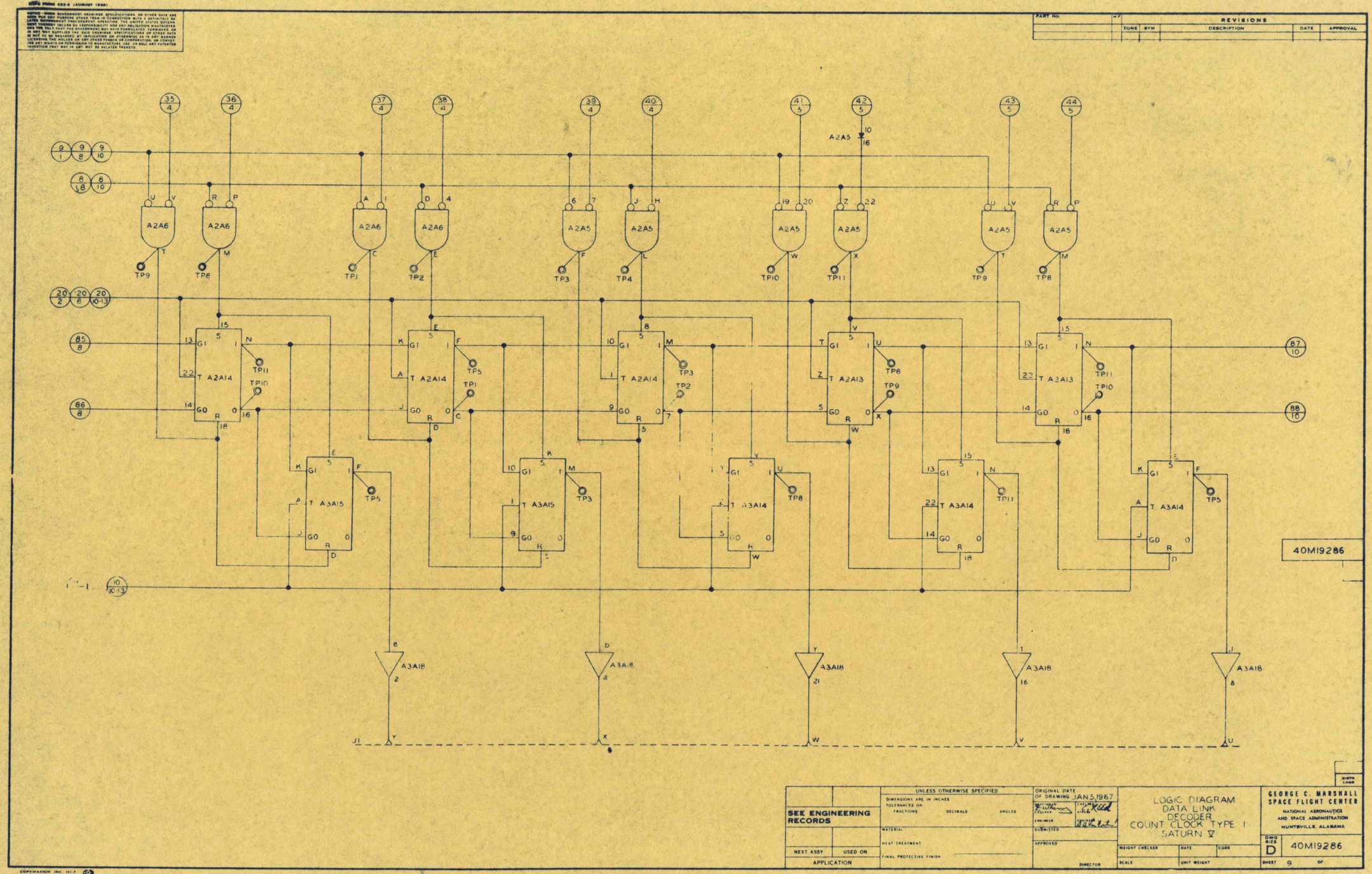
PART NO		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		B	SEE SHEET ONE	12-9-65	
		D	SEE SHEET ONE	2-7-66	



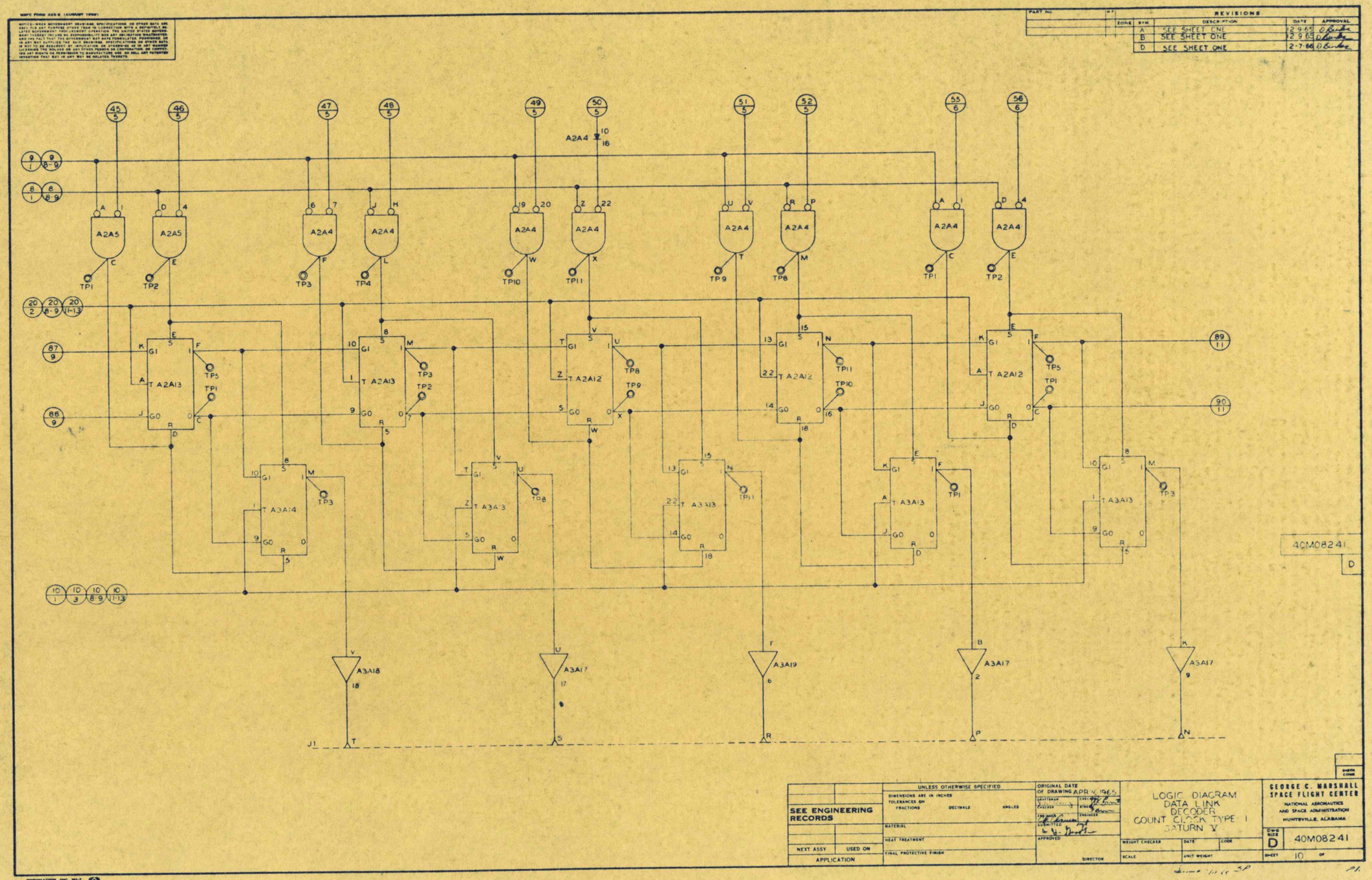
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APR 29 1965	LOGIC DIAGRAM DATA LINK DECODER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED DIRECTOR	WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT	SIZE D; 40M08241; SHEET 9 OF



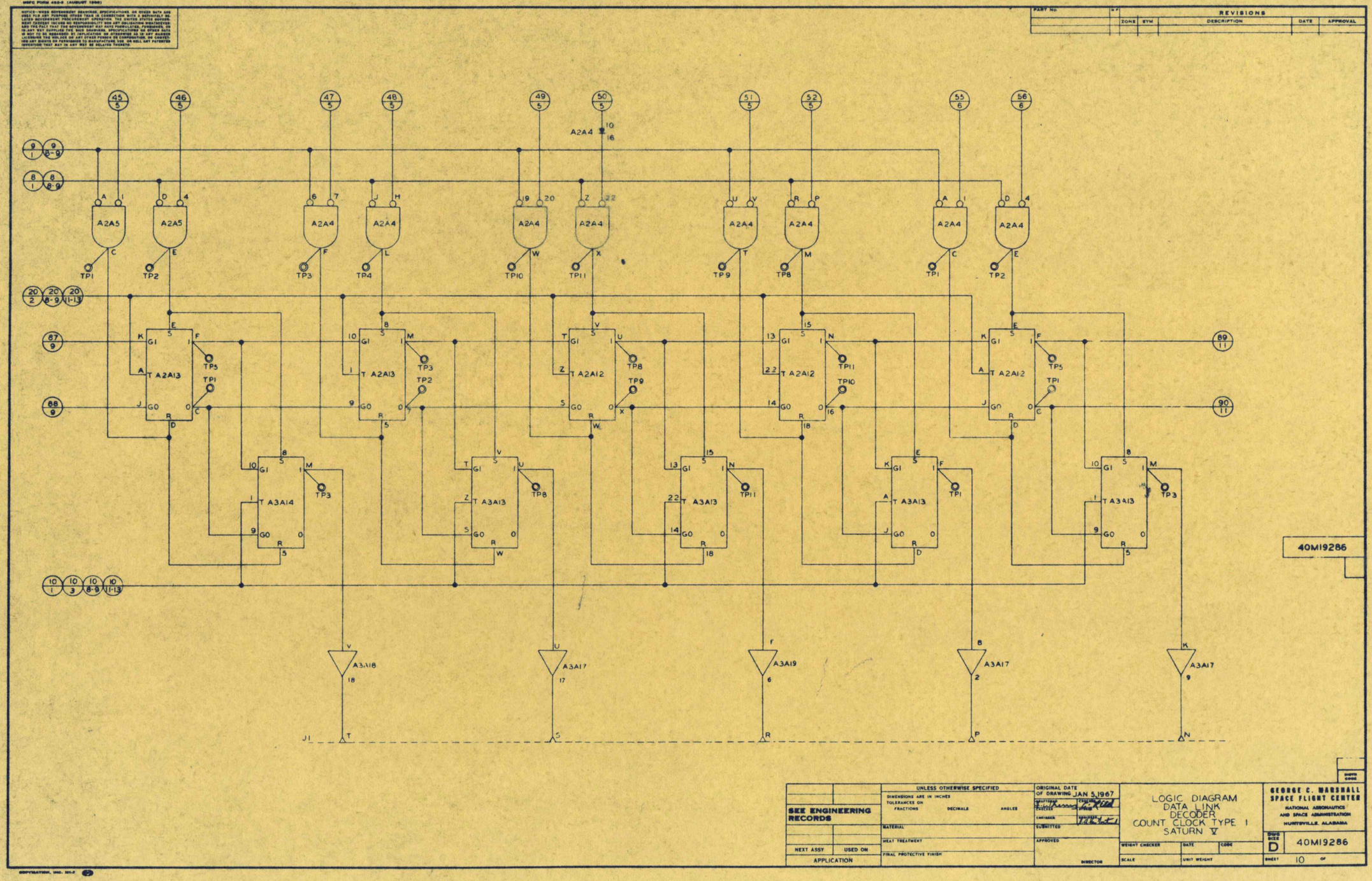
Change Date
26 June 1967



Change Date
26 June 1967



Change Date
30 November, 1966



Change Date
26 June 1967

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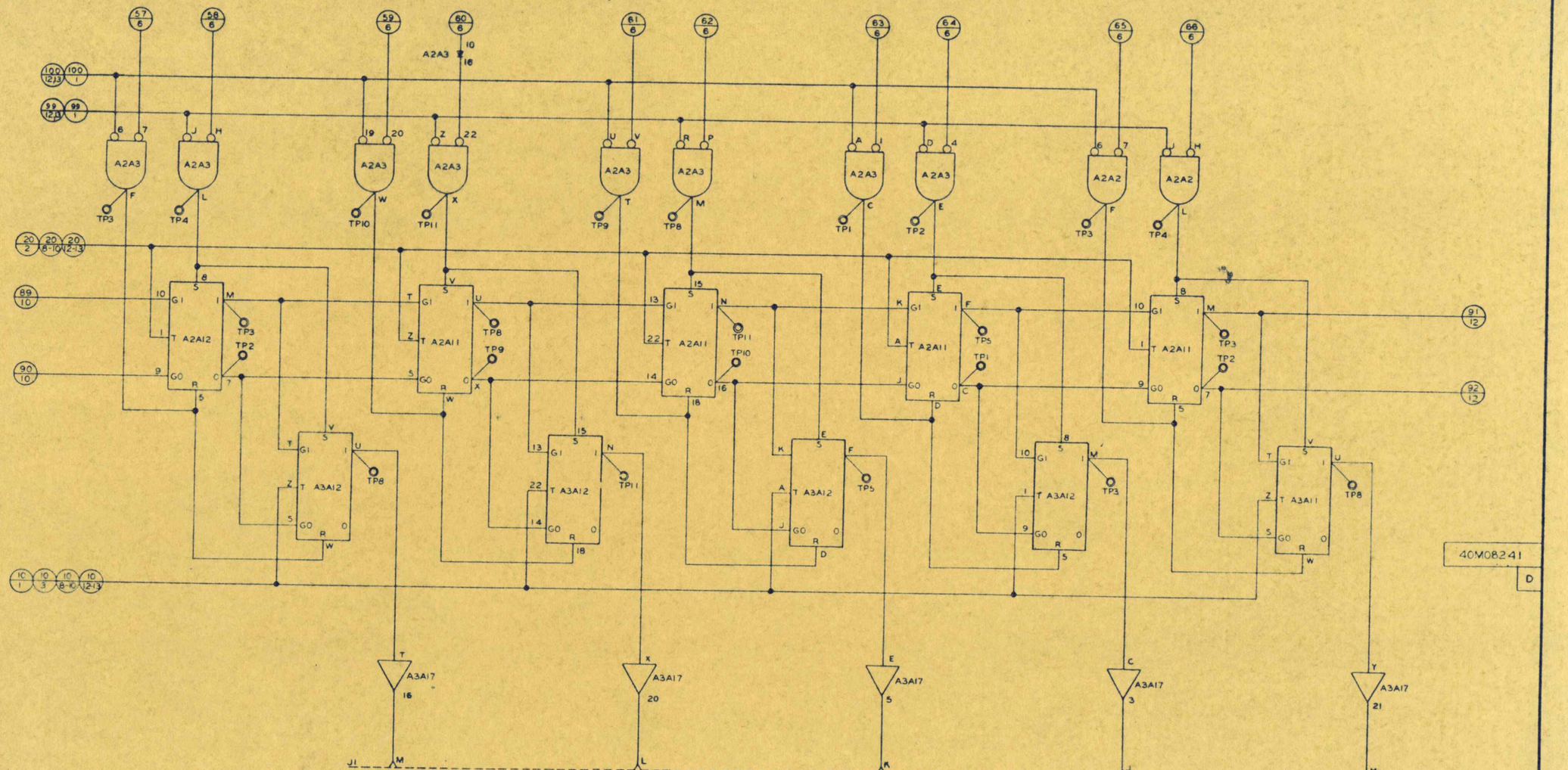
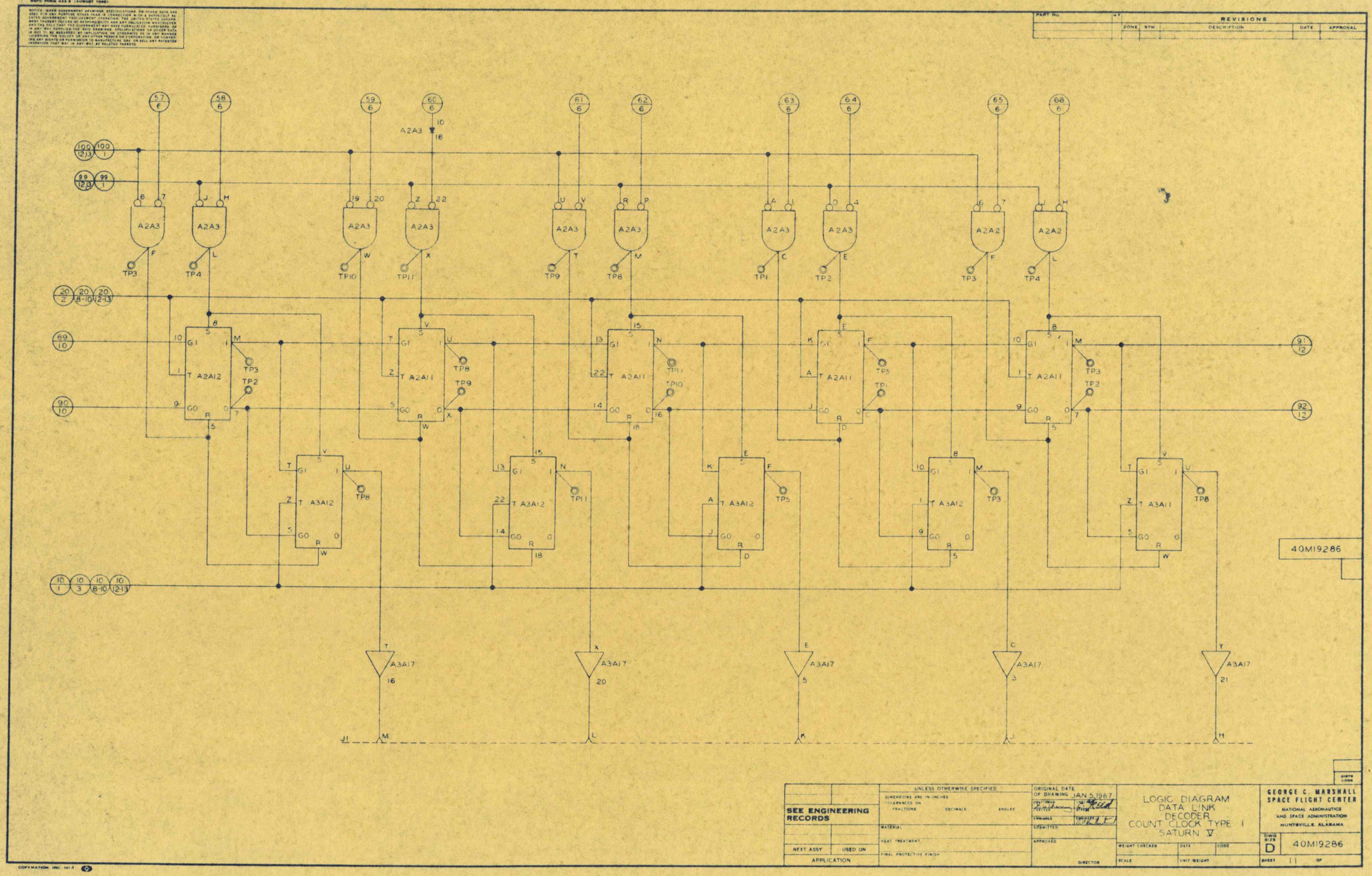
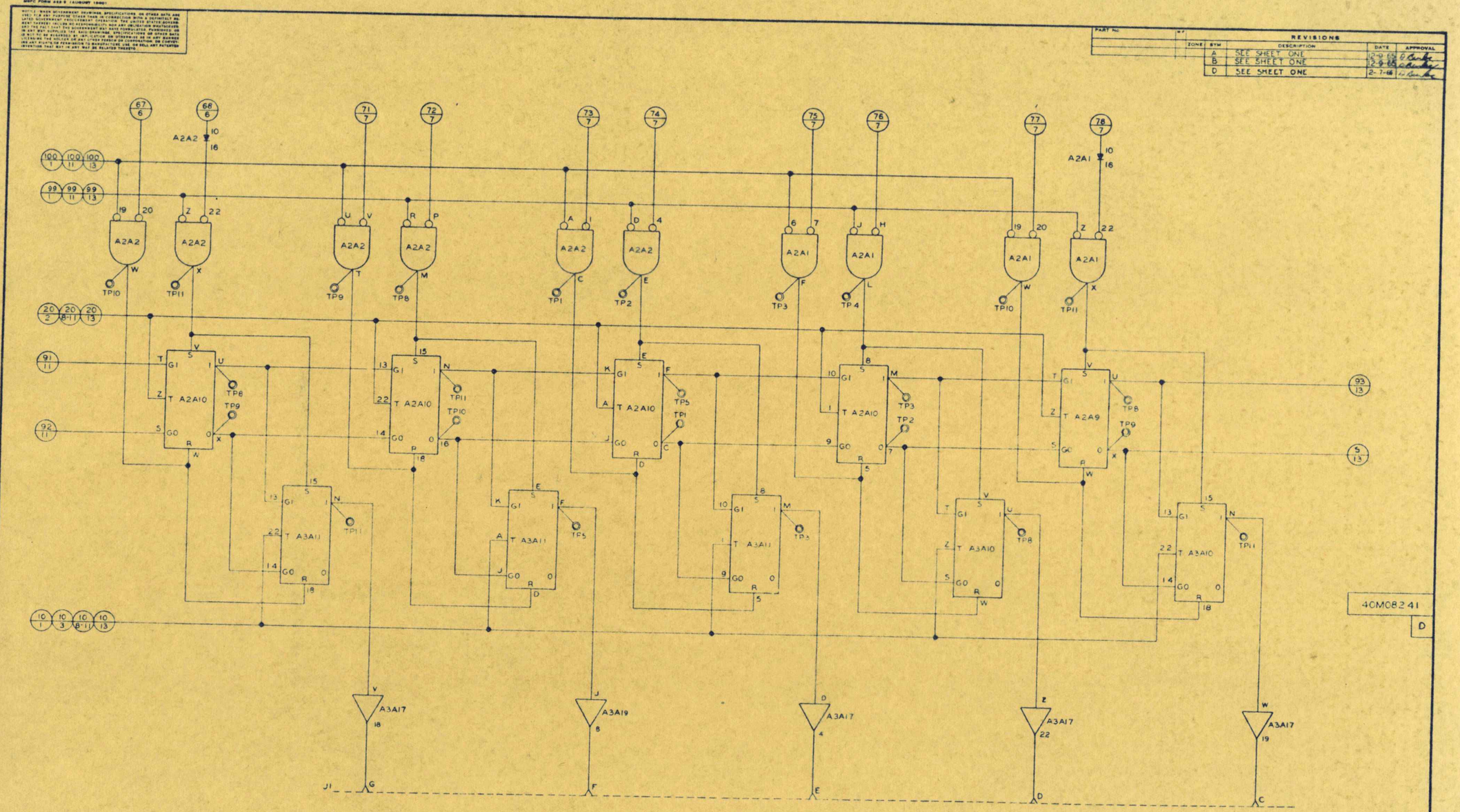
REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	B	SEE SHEET ONE	2-9-65	
	D	SEE SHEET ONE	2-7-66	



SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING APR 29 1965	LOGIC DIAGRAM DATA LINK DECODER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED: DIRECTOR	WEIGHT CHECKER / SCALE / DATE / CODE / UNIT WEIGHT	SIZE D	40M08241
				SHEET 11 OF	



Change Date
26 June 1967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A2A10
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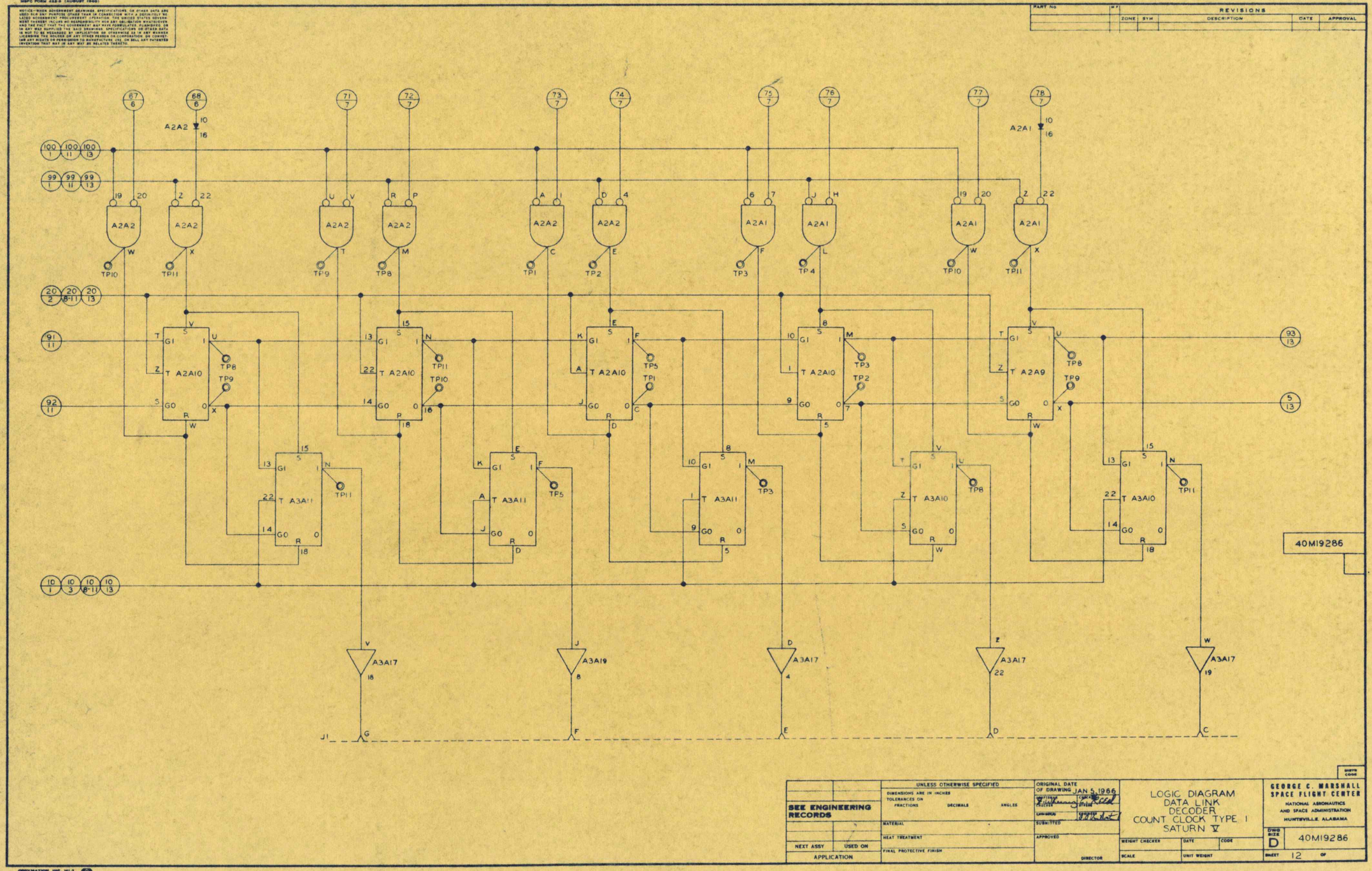
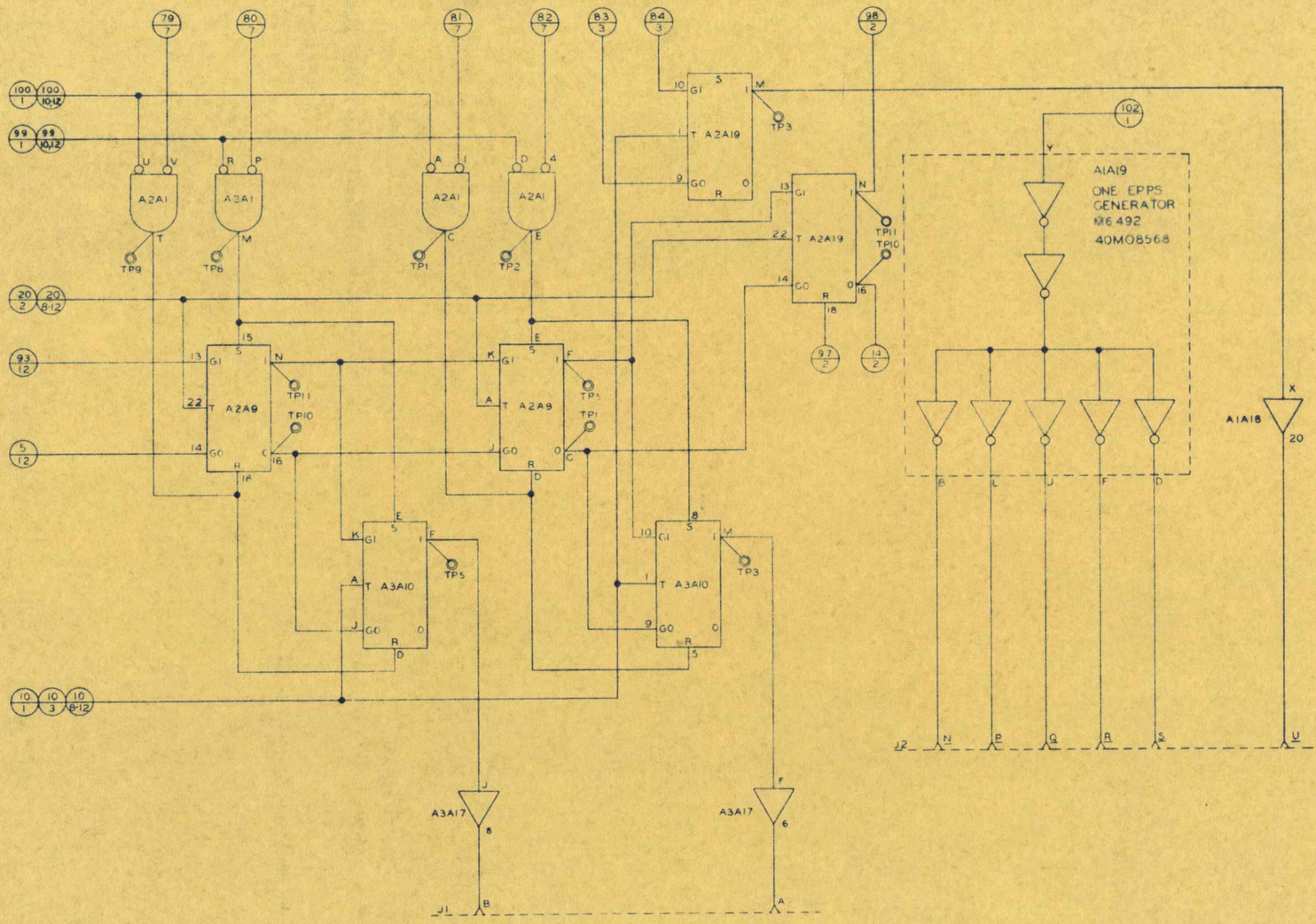
TP1
TP2
TP3
TP4
TP5
TP8
TP9
TP10
TP11
SEE ENGINEERING RECORDS
LOGIC DIAGRAM
DATA LINK
DECODER
COUNT CLOCK TYPE I
SATURN V
GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE ALABAMA
40M08241
D
SHEET 12



Change Date
26 June 1967

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M19286

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING JAN 5 1967	LOGIC DIAGRAM DATA LINK DECODER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN		SIZE D — 40M19286
		MATERIAL	CHECKED		
		HEAT TREATMENT	ENGINEER		
NEXT ASSY	USED ON	FINAL PROTECTIVE FINISH	SUBMITTED	WEIGHT CHECKER / DATE / CODE	SHEET 13 OF 13
APPLICATION			APPROVED DIRECTOR	SCALE / UNIT WEIGHT	

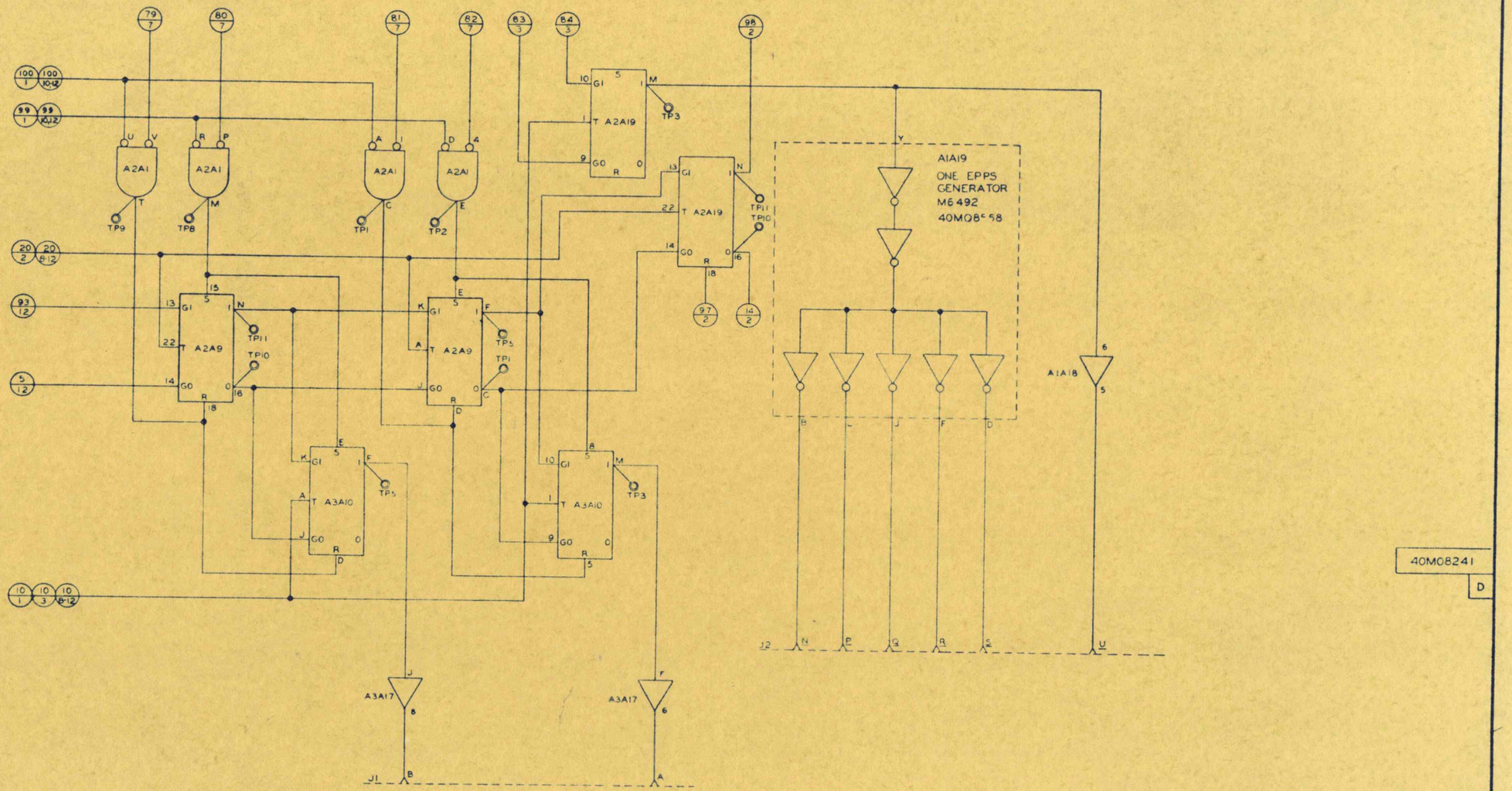
COPYMATION, INC. 19--

Change Date
26 June 1967

MSFC FORM 433-C (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO	M.F.	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
			A	SEE SHEET ONE	12-9-65	D Burke
			B	SEE SHEET ONE	12-9-65	D Burke
			C	SEE SHEET ONE	1-1-66	J Wilkerson
			D	SEE SHEET ONE	2-7-66	D Burke



40M08241 D

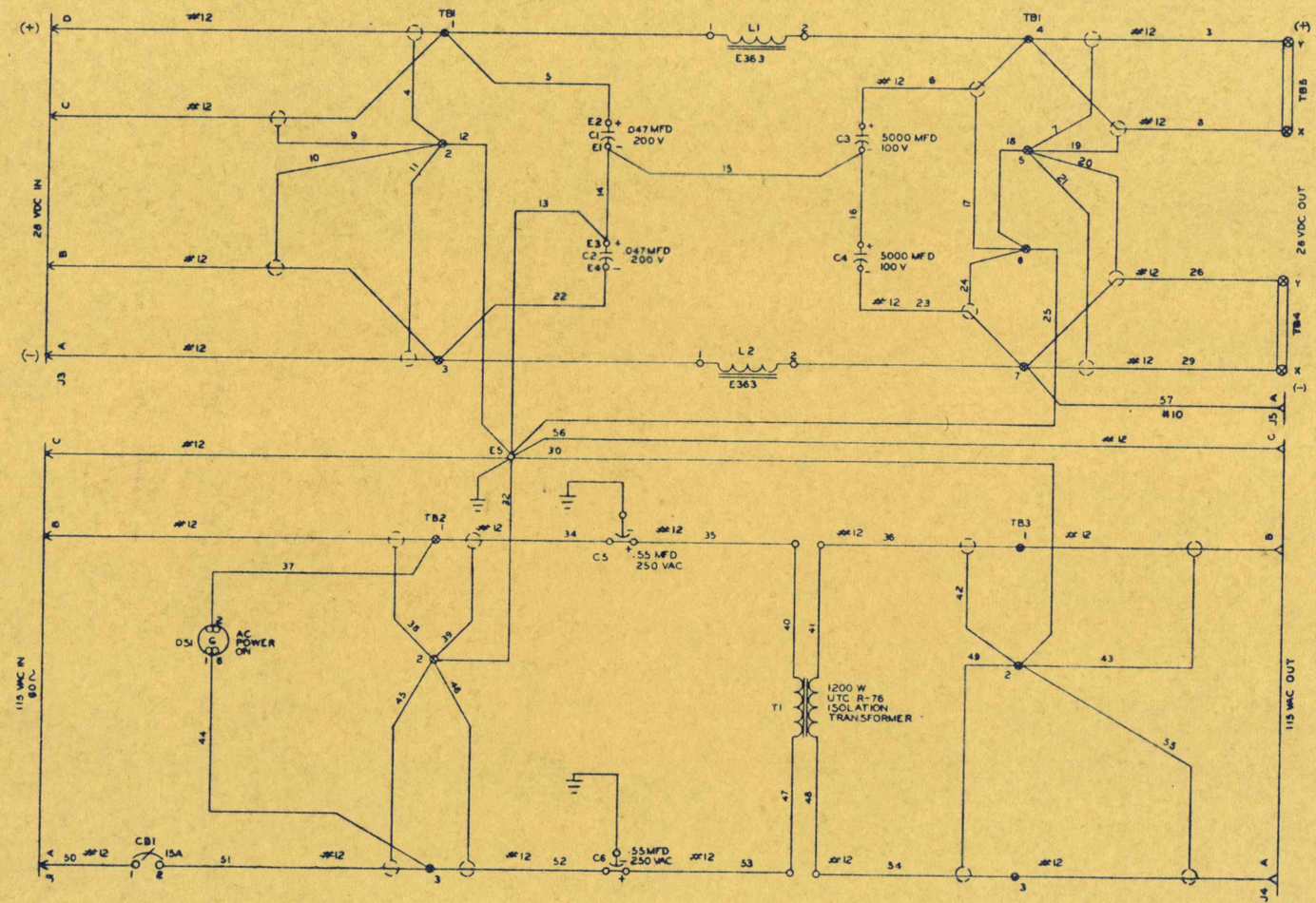
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING; CHECKED; SYSTEM; ENGINEER; APPROVED; DIRECTOR	LOGIC DIAGRAM DATA LINK DECODER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
NEXT ASSY / USED ON; APPLICATION		WEIGHT CHECKED; DATE; CODE; SCALE; UNIT WEIGHT		SIZE D	40M08241
				SHEET 13 OF 13	

Deleted 5/19/65 SP

MSFC FORM 486-3 (AUGUST 1968)

NOTICE-WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-217	9-23-65	
		B	INC EO 5P-224	10-23-65	
		C	INC EO 5P-268	2-7-66	
		D	EO 5P-86A CANCELLED	2-7-66	
		E	EO 5P-590	8-2-66	
		F	EO 5P-638	8-2-66	



NOTES:

1. WIRE IN ACCORDANCE WITH STANDARD DWG 40M00200.
2. LAST WIRE NO. USED 57.
3. ALL WIRE TO BE #20 UNLESS OTHERWISE SPECIFIED.

MOD KIT NO.	ECP NO.	DATE INC.
	09-550	
	10-553	

40M08243
F

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAR-3-65
NEXT ASSY USED ON APPLICATION		DIRECTOR

ADVANCED ELECTRICAL UNIT SCHEMATIC POWER FILTER COUNT CLOCK TYPE I SATURN V

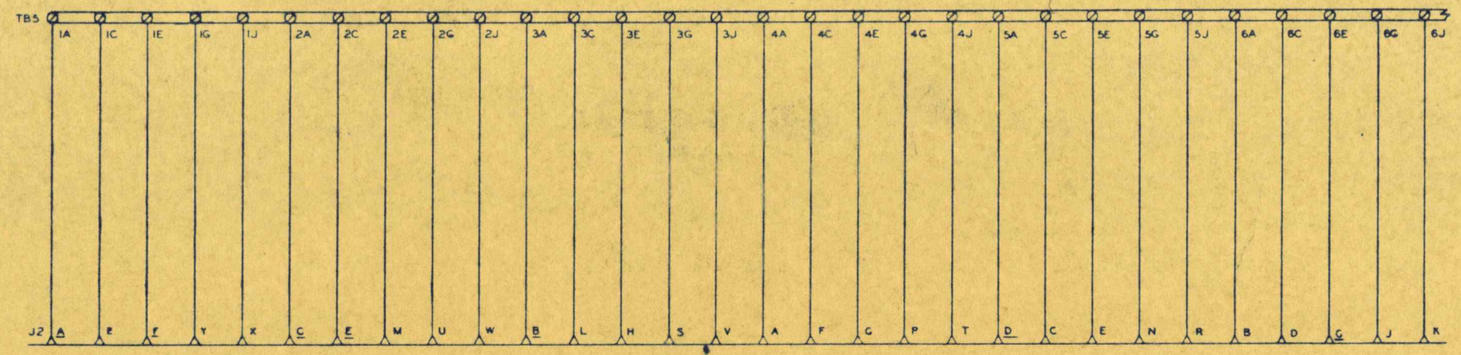
GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

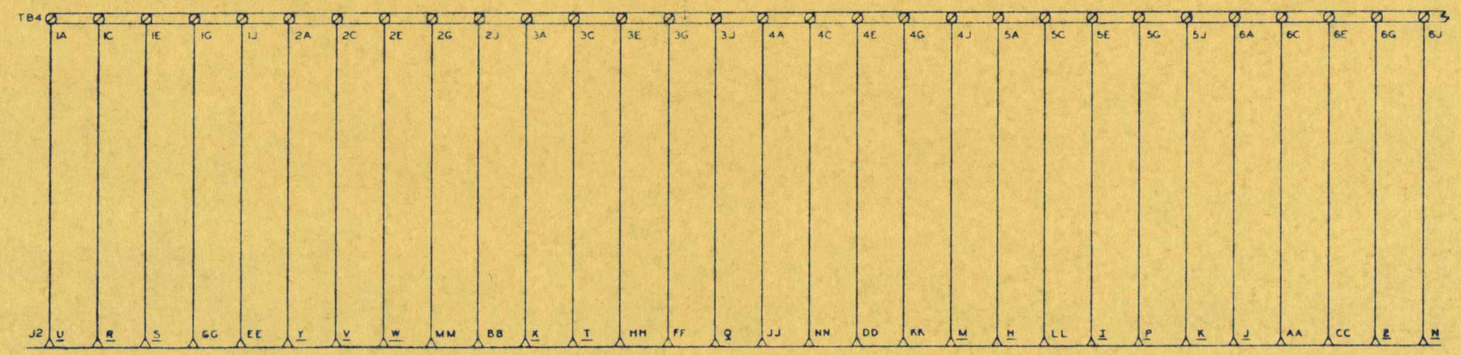
DWG SIZE D | 40M08243 | SHEET 1 OF 2

Change Date
30 November, 1966

NOTICE—THESE GOVERNMENT DRAWING, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT DOES NOT INCUR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWING, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		C	INC EO 5P-268	2-7-66	
		D	EO 5P-86A CANCELLED	2-7-66	
		E	EO 5P 590	8-2-66	

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J2
U R S GG EE Y V W MM BB X T HH FF Q JJ NN DD KK M H LL I P K J AA CC B N

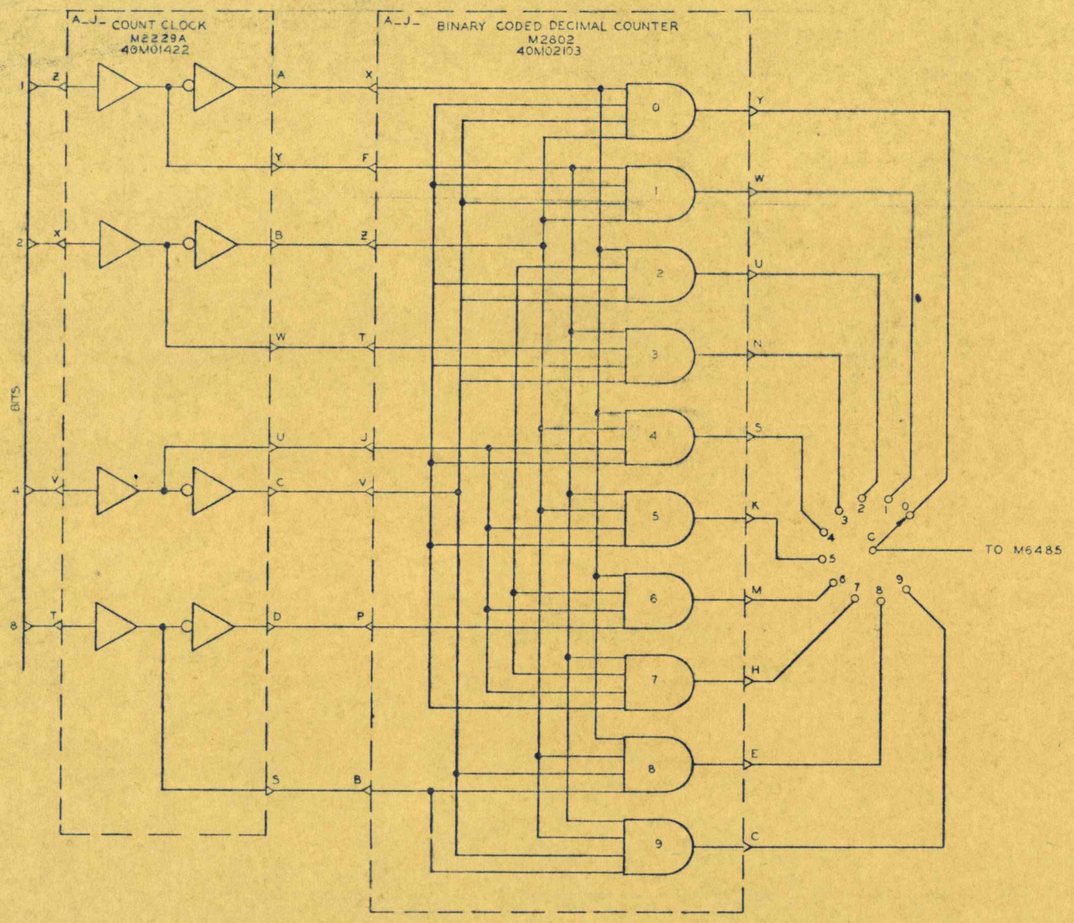
40M08243
E

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APRIL 9,65	ADVANCED ELECTRICAL UNIT SCHEMATIC POWER FILTER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKED ENGINEER SUBMITTED APPROVED DIRECTOR		SIZE D 40M08243
		MATERIAL			
		HEAT TREATMENT			
NEXT ASSY USED ON APPLICATION		FINAL PROTECTIVE FINISH		WEIGHT CHECKED DATE CODE SCALE UNIT WEIGHT	SHEET 2 OF 2

MSFC FORM 433-S (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	M.F.	REVISIONS			
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL
			A	INC. EO 5P-04	3/3/65	
			B	INC. EO 5P-359A	12-9-65	
			C	INC. EO 5P-555	2-7-66	



TYPICAL PC CARD ARRANGEMENT FOR SHEETS 2 THRU 9.

NOTES:

1. LAST BALLOON NUMBER USED 112
2. REFERENCE DRAWING: WIRING LIST 40M08265
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION.
4. REFERENCE 40M07013 FOR ASSEMBLY.

PC BOARD AND RECEPTACLE LAYOUT

J NO	PC BOARD	KEY	J NO	P.C. BOARD	KEY	J NO	PC BOARD	KEY
J27	M2802	R	J27	M2802	R	J27		
J26			J26			J26		
J25			J25			J25		
J24			J24			J24		
J23			J23			J23		
J22			J22			J22	M6485	Y
J21			J21			J21		
J20	M2802	R	J20	M2802	R	J20		
J19	M2229	E	J19	M2229	E	J19	M6485	Y
J18	M2802	R	J18	M2802	R	J18	M2802	R
J17			J17			J17		
J16			J16			J16		
J15			J15			J15		
J14			J14			J14		
J13			J13			J13		
J12			J12			J12		
J11	M2802	R	J11	M2802	R	J11	M2802	R
J10	M2229	E	J10	M2229	E	J10	M2229	E
J9	M2802	R	J9	M2802	R	J9	M2802	R
J8			J8			J8		
J7			J7			J7		
J6			J6			J6		
J5			J5			J5		
J4			J4			J4		
J3			J3			J3		
J2	M2802	R	J2	M2802	R	J2	M2802	R
J1	M2229	E	J1	M2229	E	J1	M2229	E
A1			A2			A3		

40M08249 C

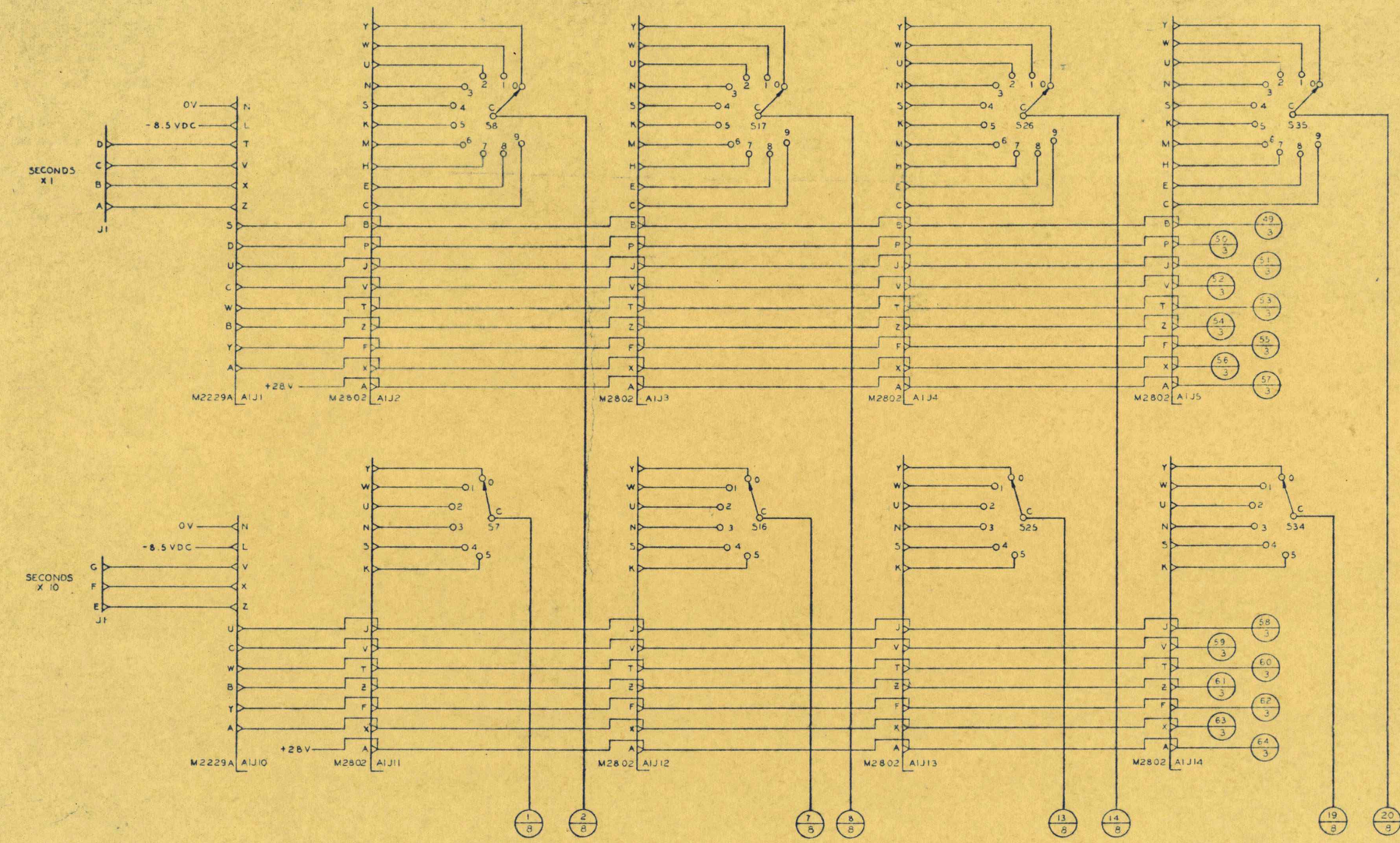
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APR 23 1965	LOGIC DIAGRAM TIMED OUTPUT COMMAND COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON	MATERIAL	DRAFTSMAN / CHECKER / ENGINEER / SUBMITTED / APPROVED	WEIGHT CHECKER / DATE / CODE	DWG SIZE D — 40M08249
APPLICATION	HEAT TREATMENT / FINAL PROTECTIVE FINISH	DIRECTOR	SCALE / UNIT WEIGHT	SHEET 1 OF 9

COPYMATION, INC. 181-7

MSFC FORM 422-B (AUGUST 1960)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		B	SEE SHEET ONE	12-9-65	



40M08249

B

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APR 19, 1965	LOGIC DIAGRAM TIMED OUTPUT COMMAND COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY	USED ON	MATERIAL	APPROVED		DWG SIZE D — 40M08249
APPLICATION		HEAT TREATMENT	DIRECTOR		
		FINAL PROTECTIVE FINISH		WEIGHT CHECKER / DATE / CODE	SHEET 2 OF
				SCALE / UNIT WEIGHT	

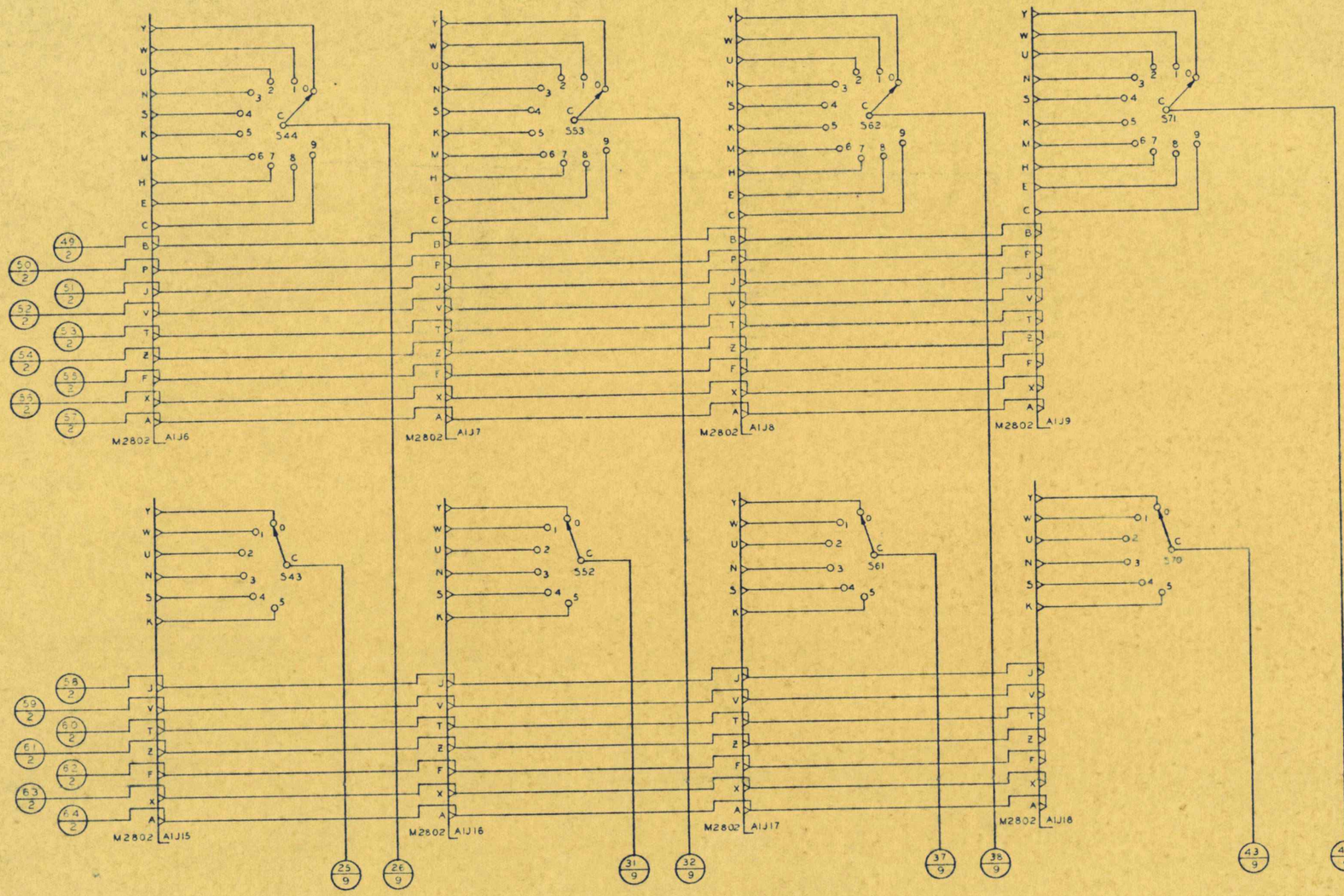
DATA CODE

COPYMATION, INC. 101-7

MSFC FORM 422 3 (AUGUST 1950)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT DOES NOT THEREBY INCUR ANY RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	MFG ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL



40M08249

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APR 23, 1965	LOGIC DIAGRAM TIMED OUTPUT COMMAND COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON: APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	DRAFTSMAN; CHECKER; SUBMITTED; APPROVED; DIRECTOR; ENGINEER	WEIGHT CHECKER; DATE; CODE; SCALE; UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40M08249 — SHEET 3 OF

JRDB RSP

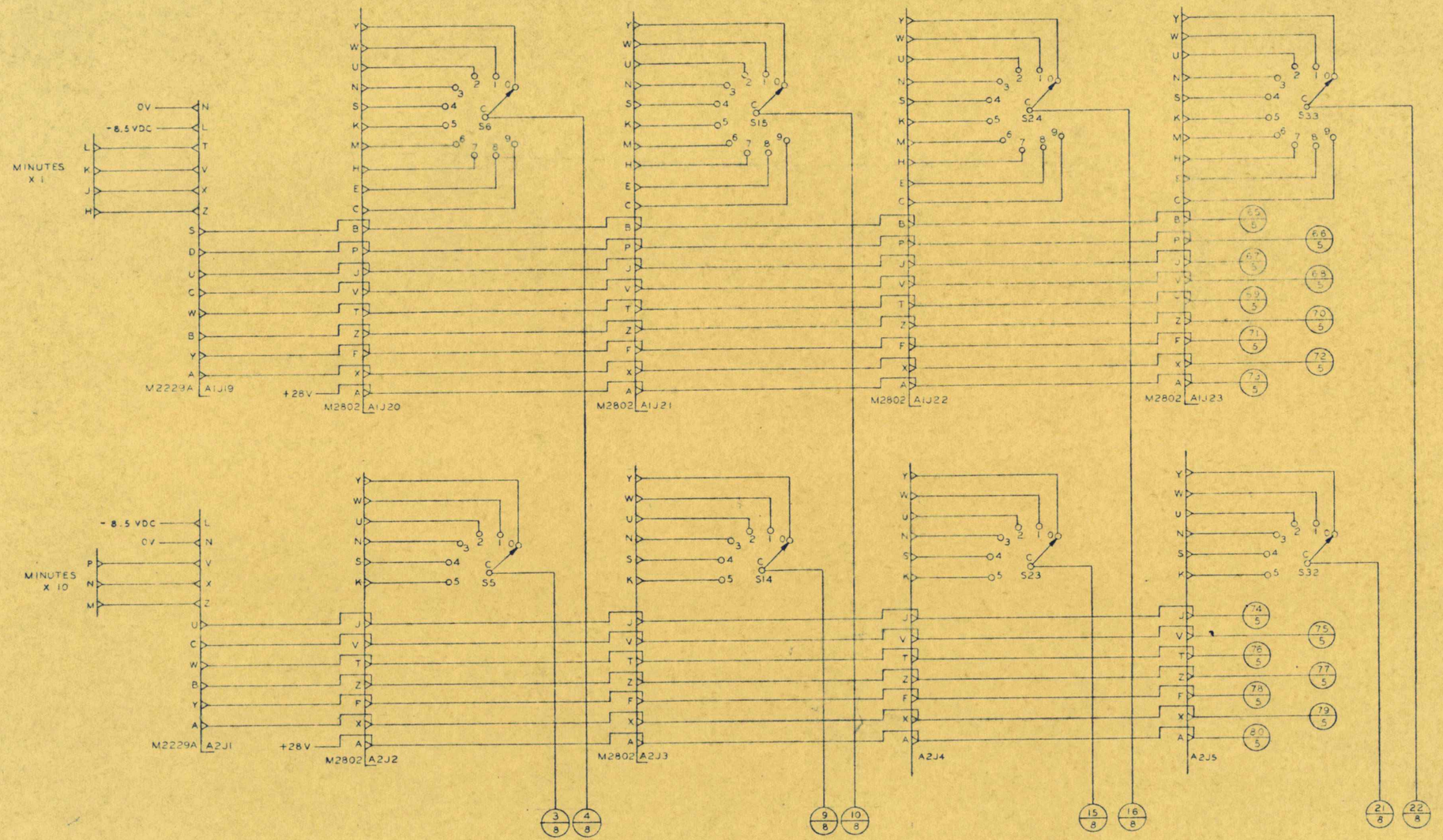
Issued 5/19/65 SP

COPYMATION, INC. 1951

NSPC FORM 422-B (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	H/I	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
			B	SEE SHEET ONE	12-7-65	C. Burke
			C	SEE SHEET ONE	12-7-66	C. Burke



40M08249
C

UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APRIL 23,65	LOGIC DIAGRAM TIMED OUTPUT COMMAND COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER
DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	DRAFTSMAN / ENGINEER / CHECKER / ENGINEER / SUBMITTED / APPROVED / DIRECTOR	WEIGHT CHECKER / DATE / CODE SCALE / UNIT WEIGHT	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS	MATERIAL / HEAT TREATMENT / FINAL PROTECTIVE FINISH		DWG SIZE D — 40M08249
NEXT ASSY / USED ON APPLICATION			SHEET 4 OF

I.12.08 11
R+F 3
DATA CODE

Issued 5/13/65 JP

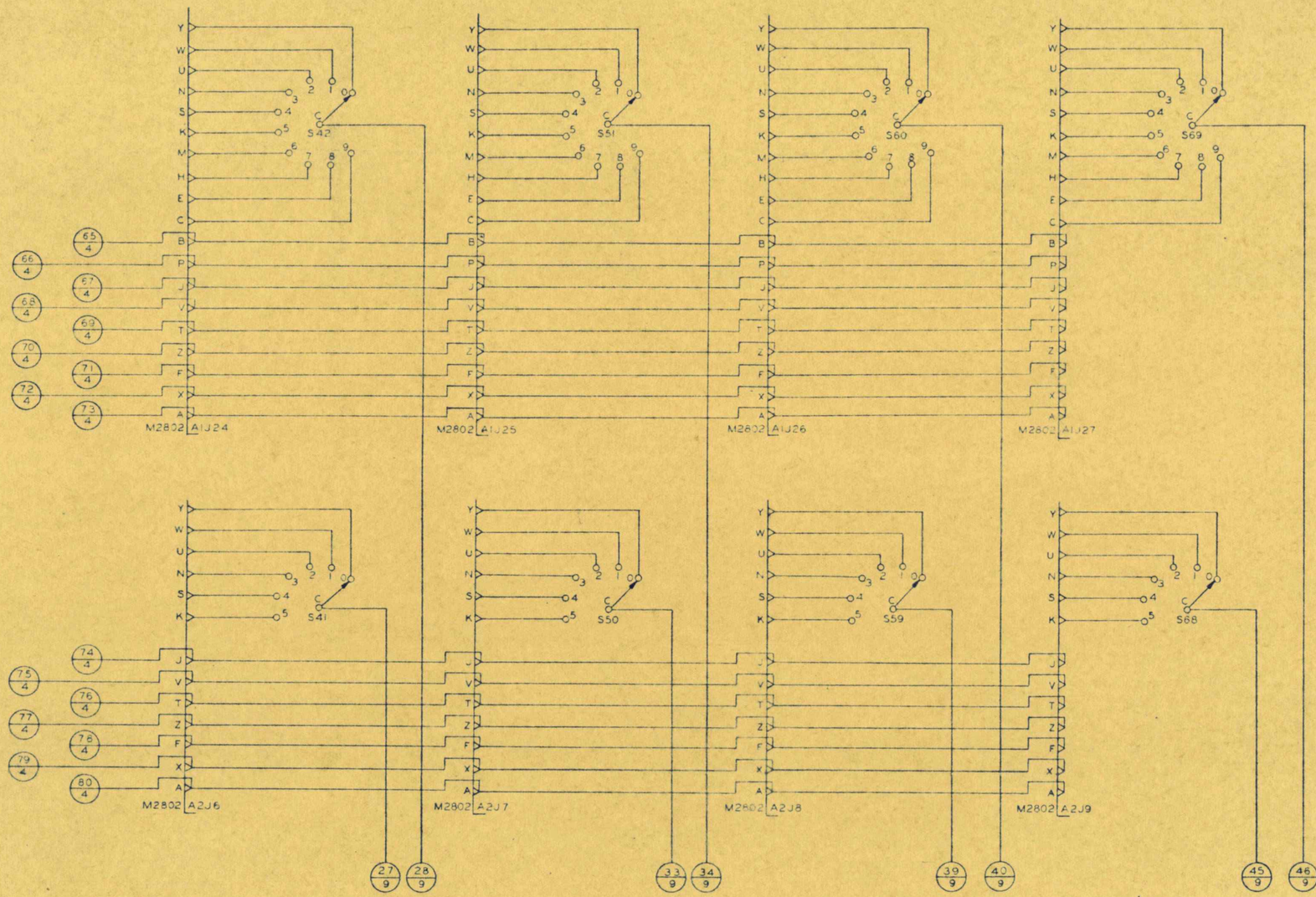
24

COPYMATION, INC. 301-7

MSFC FORM 422-B (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	M F	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M08249

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING	LOGIC DIAGRAM TIMED OUTPUT COMMAND COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS — DECIMALS — ANGLES —	DRAFTSMAN		NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
		MATERIAL	CHECKED		HUNTSVILLE, ALABAMA
		HEAT TREATMENT	ENGINEER		DWG SIZE D — 40M08249
NEXT ASSY	USED ON	FINAL PROTECTIVE FINISH	SUBMITTED		
APPLICATION			APPROVED DIRECTOR	WEIGHT CHECKER / DATE / CODE	SHEET 5 OF
				SCALE / UNIT WEIGHT	

I.12.08 11
P.S.A. 13
SHFTR CODE

COPYMATION, INC. NY-7

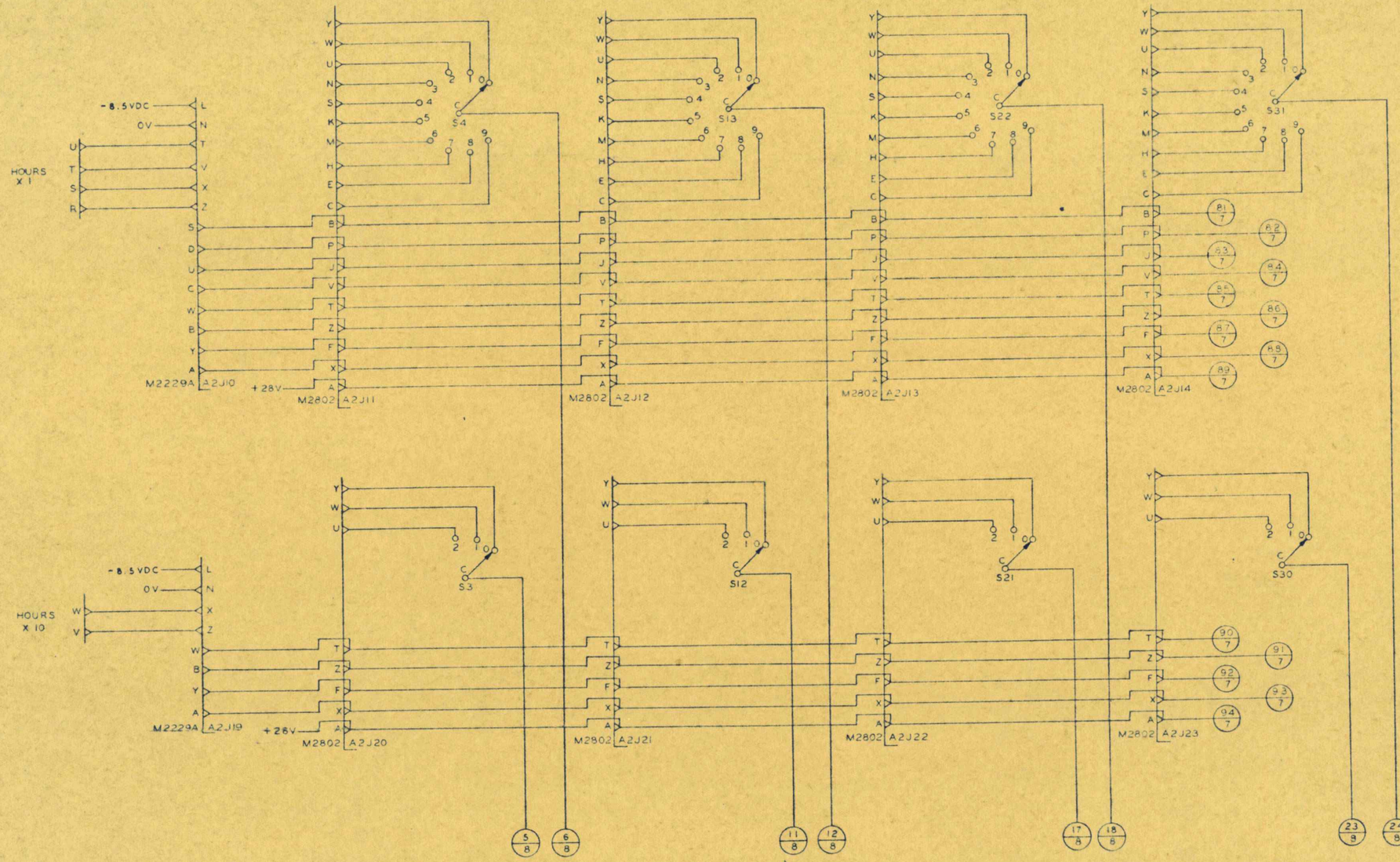
Issued 6/17/65 SP

24

NSFC FORM 433-S (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.		REVISIONS			
	ZONE	SYM.	DESCRIPTION	DATE	APPROVAL
		B	SEE SHEET ONE	12-7-65	



40M08249
B

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APRIL 23,65	LOGIC DIAGRAM TIMED OUT PUT COMMAND COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKER ENGINEER SUBMITTED APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE SCALE UNIT WEIGHT	DWG SIZE D 40M08249 SHEET 6 OF
NEXT ASSY USED ON APPLICATION		MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH			

V 12.08.11
PSA 1/3
DATA CODE

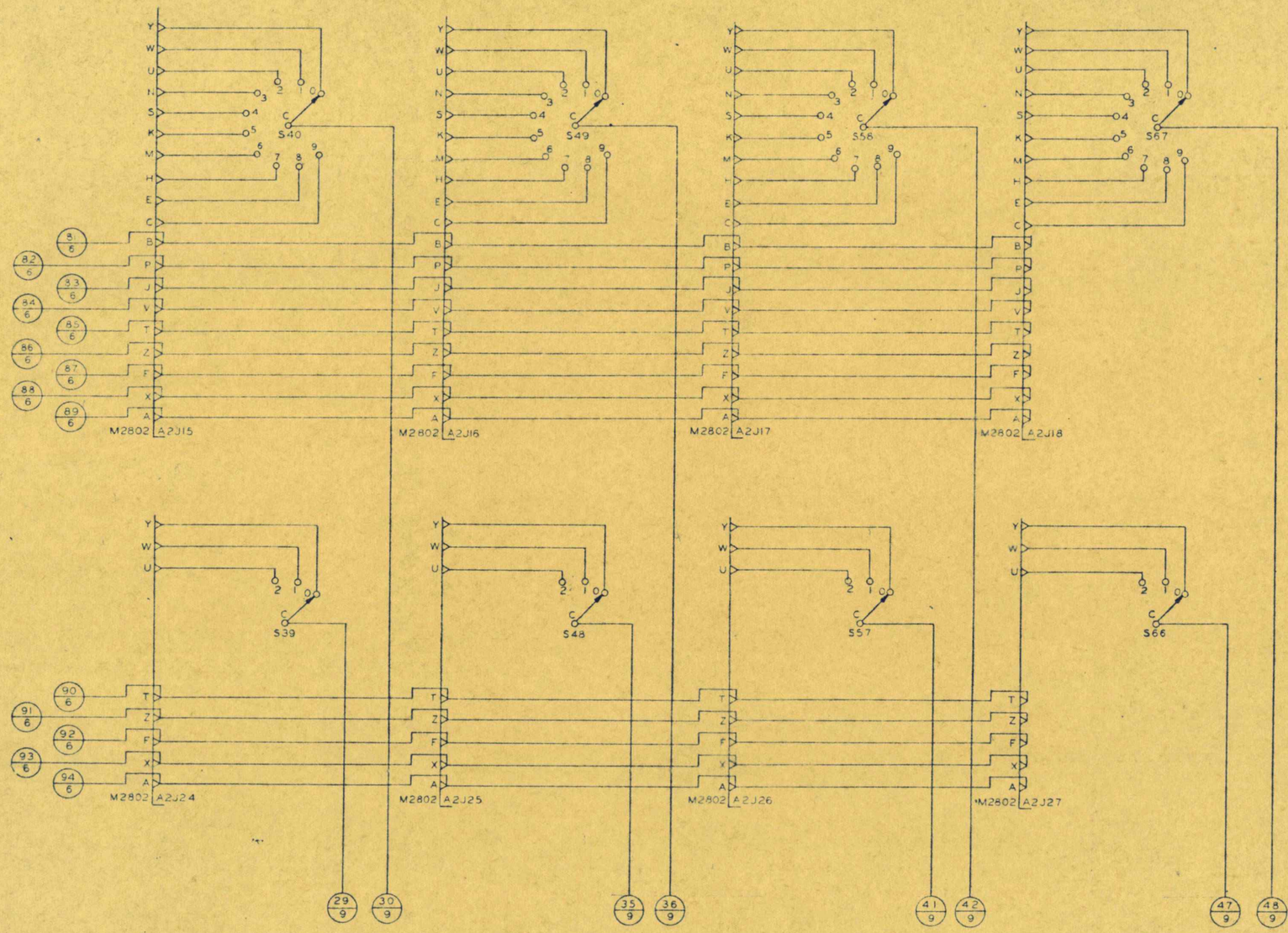
Issued 5/17/67

COPYMATION, INC. 101-7

NSFC FORM 423-3 (AUGUST 1960)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE FURNISHED AND FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	M F	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M08249

UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APRIL 23, 64	LOGIC DIAGRAM TIMED OUTPUT COMMAND COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS — DECIMALS — ANGLES —	DRAFTSMAN / CHECKER / ENGINEER / SUBMITTED / APPROVED / DIRECTOR	WEIGHT CHECKER / DATE / CODE / SCALE / UNIT WEIGHT	DWG SIZE D — 40M08249 — SHEET 7 OF
MATERIAL — HEAT TREATMENT — FINAL PROTECTIVE FINISH —			
SEE ENGINEERING RECORDS			
NEXT ASSY / USED ON / APPLICATION			

V.12.08 11
FSR 13
DISTR CODE

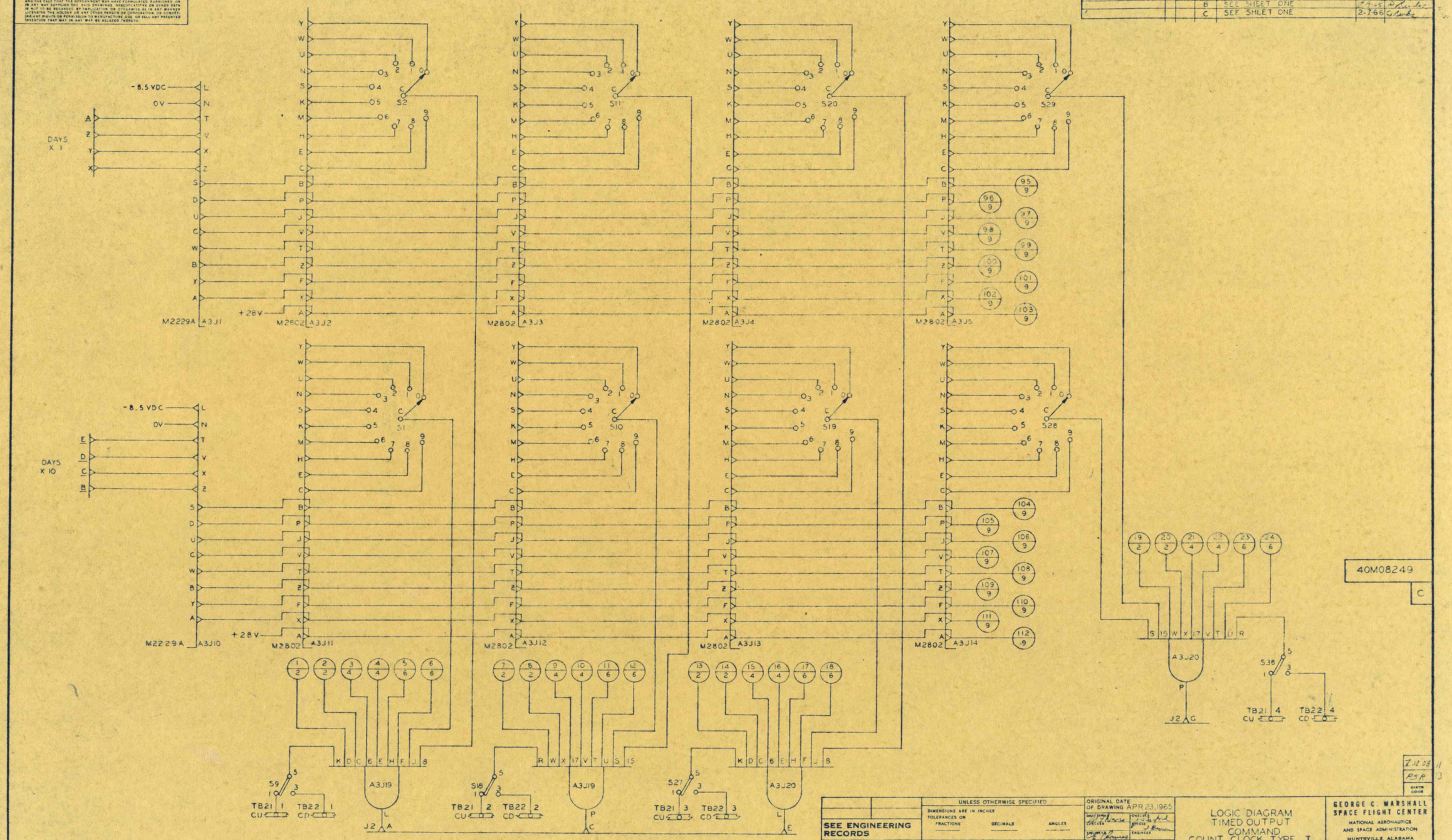
COPYMATION, INC., 101-2

Issued 5/17/65 SP

MSFC FORM 433-S (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	NP	REVISIONS			
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL
			B	SEE SHEET ONE	1-9-65	
			C	SEE SHEET ONE	2-7-66	



		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APR 23, 1965		GEORGE C. MARSHALL SPACE FLIGHT CENTER
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	DRAFTING	DESIGN	LOGIC DIAGRAM TIMED OUTPUT COMMAND COUNT CLOCK TYPE I SATURN V	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
		MATERIAL	CHECKED	ENGINEER		
		HEAT TREATMENT	SUBMITTED			DWG SIZE D — 40M08249
NEXT ASSY	USED ON	FINAL PROTECTIVE FINISH	APPROVED			
APPLICATION			DIRECTOR	WEIGHT CHECKER / DATE / CODE		SHEET 8 OF
				SCALE / UNIT WEIGHT		

Z 12 28 11
RSP 10
DATA CODE

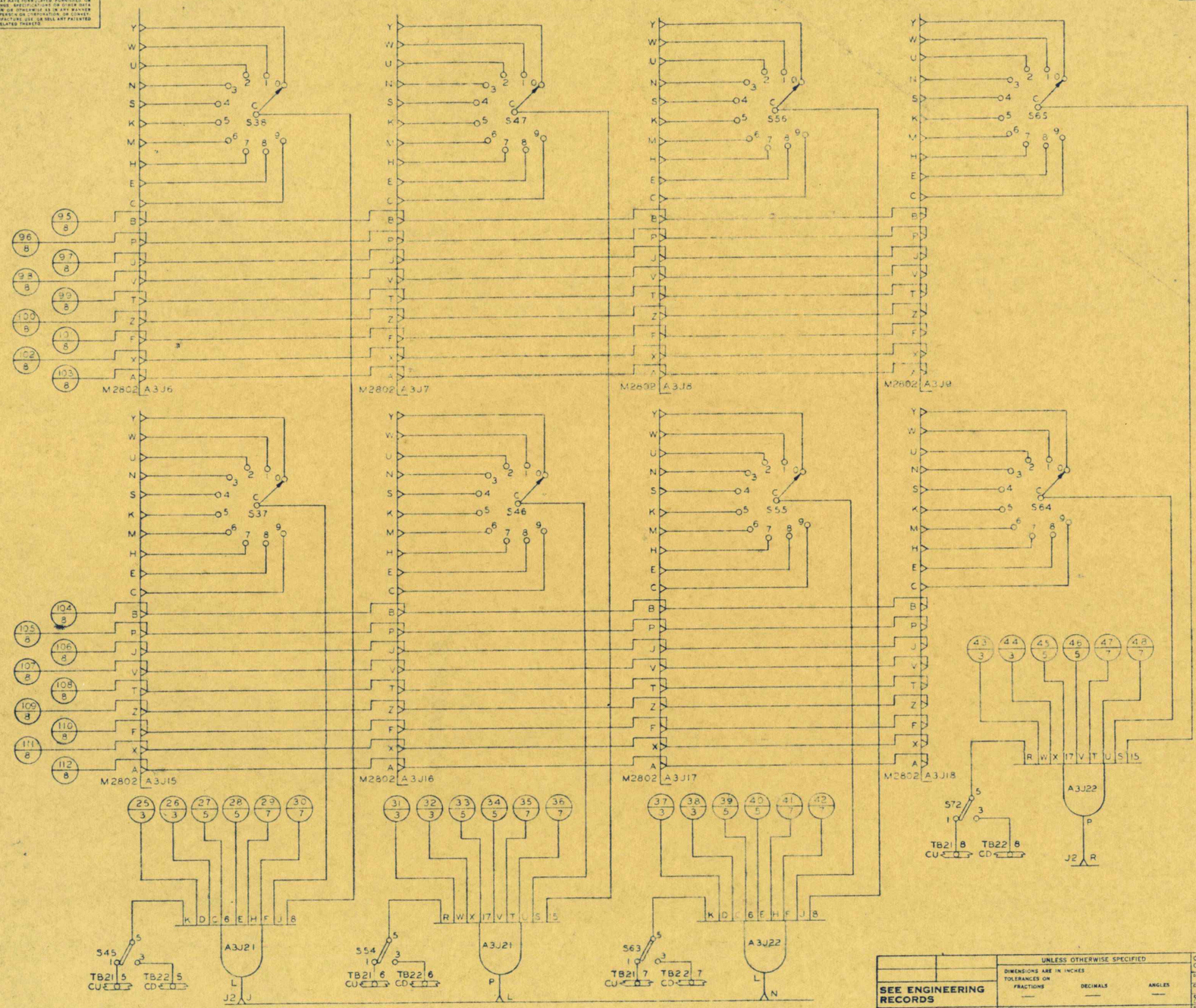
Issued 3/17/65 SP

COPYMATION, INC. 101-7

MSFC FORM 482-3 (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	M.F.	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		C	SEE SHEET ONE	7-6-65	



40M08249
C

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APRIL 23, 65	LOGIC DIAGRAM TMIED OUTPUT COMMAND COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS — DECIMALS — ANGLES —	DRAFTSMAN		DWG SIZE D — 40M08249
		MATERIAL	CHECKER		
NEXT ASSY	USED ON	HEAT TREATMENT	CHIEF DESIGNER		WEIGHT CHECKER — DATE — CODE
APPLICATION		FINAL PROTECTIVE FINISH	SUBMITTED		SCALE — UNIT WEIGHT
			APPROVED DIRECTOR		SHEET 9 OF 9

I.12.08 11
P.S.R. 13
BIRTH CODE

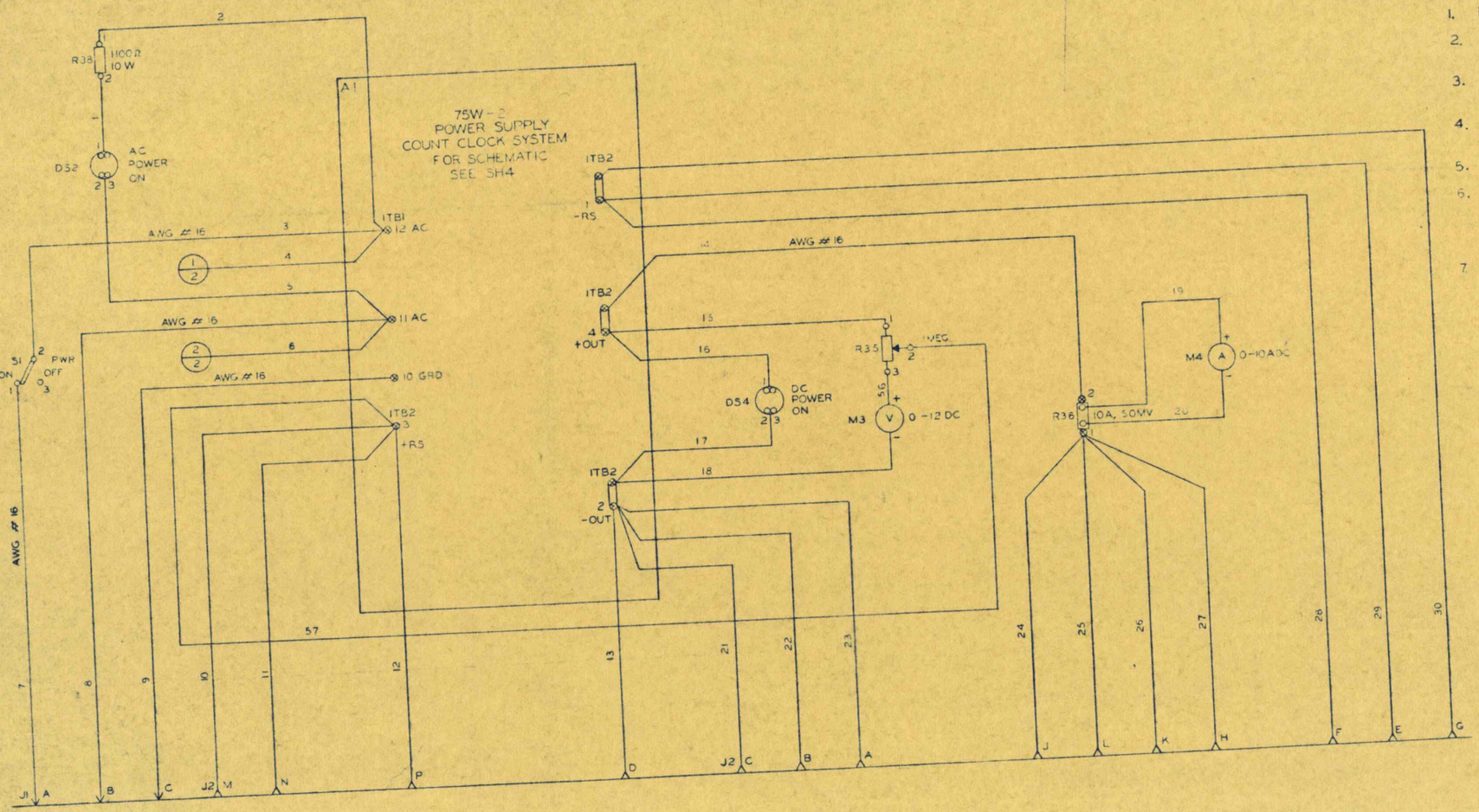
Issued 5/17/65 SP

27

MSFC FORM 435-3 (AUGUST 1960)

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS				
PART NO.	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	ING EO SP-327	1-3-65	
		B	ING EO SP-327	2-9-65	
		C	SP-449A CANCELLED	2-9-65	



NOTES:

1. LAST WIRE NO. USED 58.
2. WIRE IN ACCORDANCE WITH STANDARDS DWG 40M00200.
3. ALL LAMPS TO BE GREEN UNLESS OTHERWISE SPECIFIED.
4. ALL WIRE TO BE NO 20 AWG UNLESS OTHERWISE SPECIFIED.
5. LAST BALLOON NUMBER USED 4
6. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
7. SHEET NO. 3 IS DOCUMENTATION OF BEHLMAN-INVAR POWER SUPPLY 75W-2. SHEET NO. 4 IS DOCUMENTATION OF BEHLMAN-INVAR POWER SUPPLY 75W-3.

40M08250
C

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING DEC 22 1964
40M08213		MATERIAL	APPROVED
NEXT ASSY	USED ON	HEAT TREATMENT	DIRECTOR
APPLICATION		FINAL PROTECTIVE FINISH	

ADVANCED ELECTRICAL UNIT SCHEMATIC
-8.5 & -6.5 VDC POWER SUP.
COUNT CLOCK TYPE I
SATURN V

WEIGHT CHECKER | DATE | CODE
SCALE | UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE ALABAMA

DWG SIZE D | 40M08250
SHEET 1 OF 4

N/A
DISTR. CODE

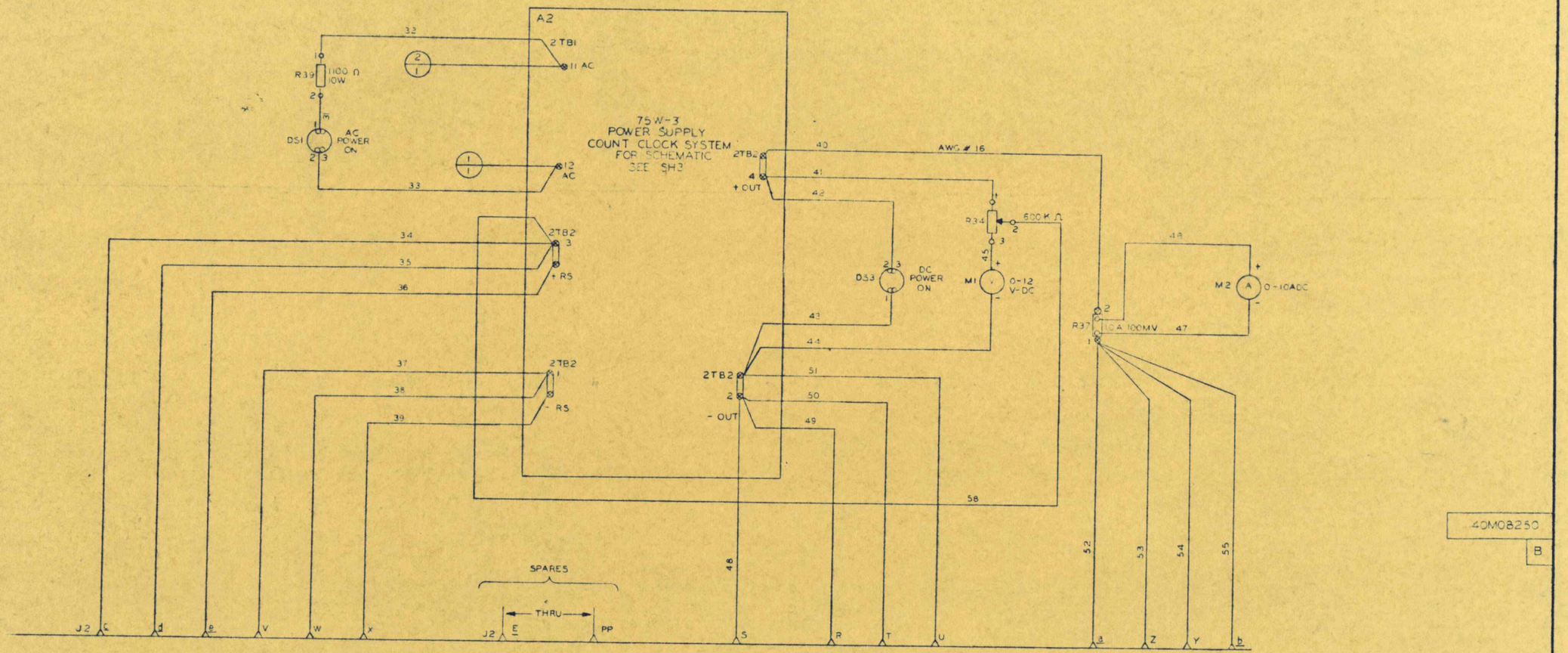
issued 2/24/65 SP

6-67

MSFC FORM 482-2 (AUGUST 1960)

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	M F	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-30	3-4-65	
		B	INC EO 5P-227	2.11.66	



40M08250
B

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING DEC 21 1964	ADVANCED ELECTRICAL UNIT SCHEMATIC -65 & -85 VDC POWER SUP COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAWN CHECKER CHECKER STRESS ENGINEER SUBMITTED APPROVED		DWG SIZE D 40M08250
NEXT ASSY	USED ON	MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH	DIRECTOR	WEIGHT CHECKER DATE CODE SCALE UNIT WEIGHT	SHEET 3 OF
APPLICATION					

DIST. CODE 251

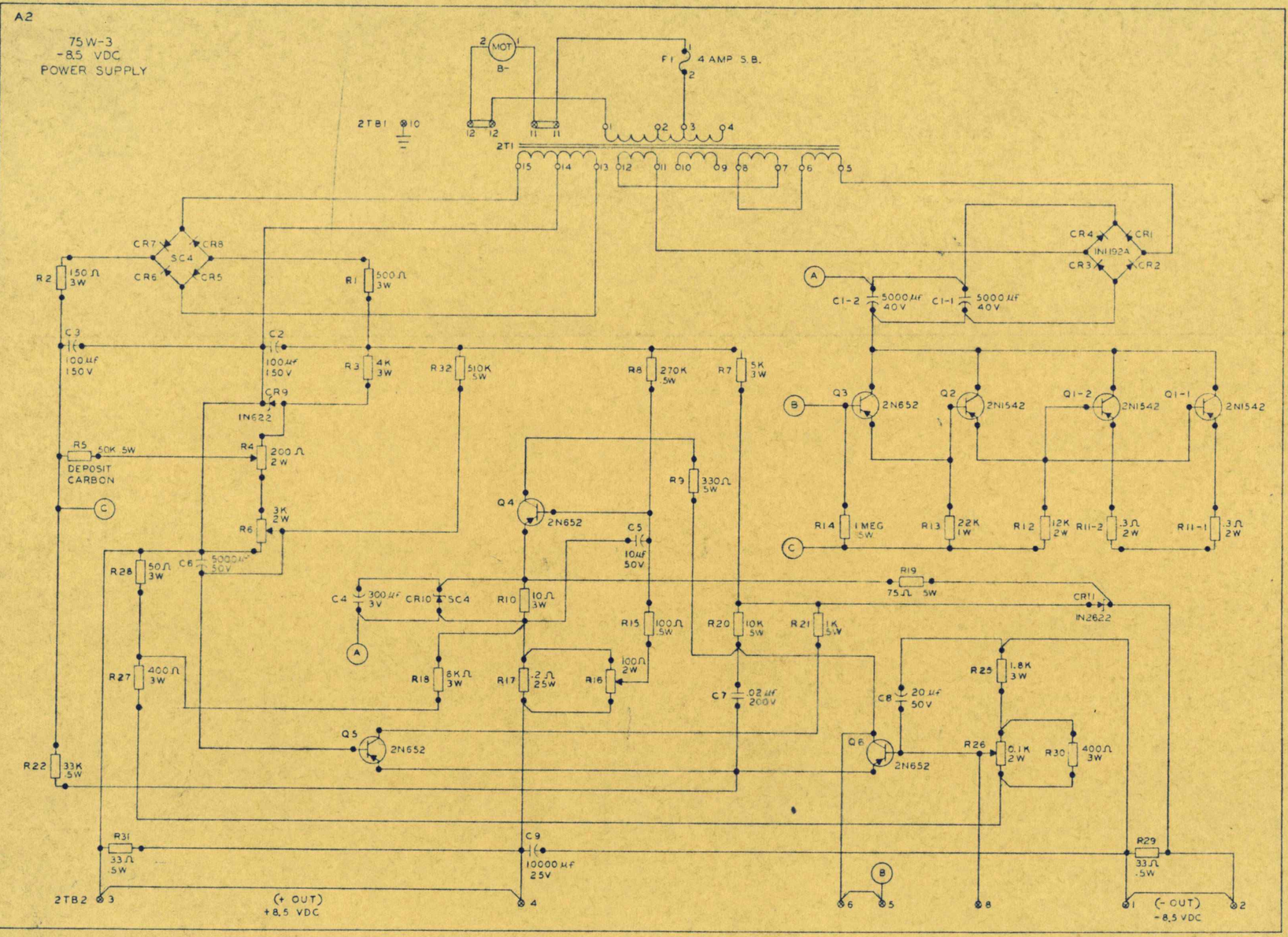
MSFC FORM 482-3 (AUGUST 1960)

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	# P	REVISIONS				
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL

A2

75 W-3
-8.5 VDC
POWER SUPPLY



40M08250

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING DEC 28 1964	ADVANCED ELECTRICAL UNIT SCHEMATIC -6.5& -8.5 VDC POWER SUP. COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKER SUBMITTED APPROVED	WEIGHT CHECKER DATE CODE SCALE UNIT WEIGHT	DWG SIZE D 40M08250
NEXT ASSY	USED ON	MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH	STRESS ENGINEER DIRECTOR		SHEET 3 OF
APPLICATION					

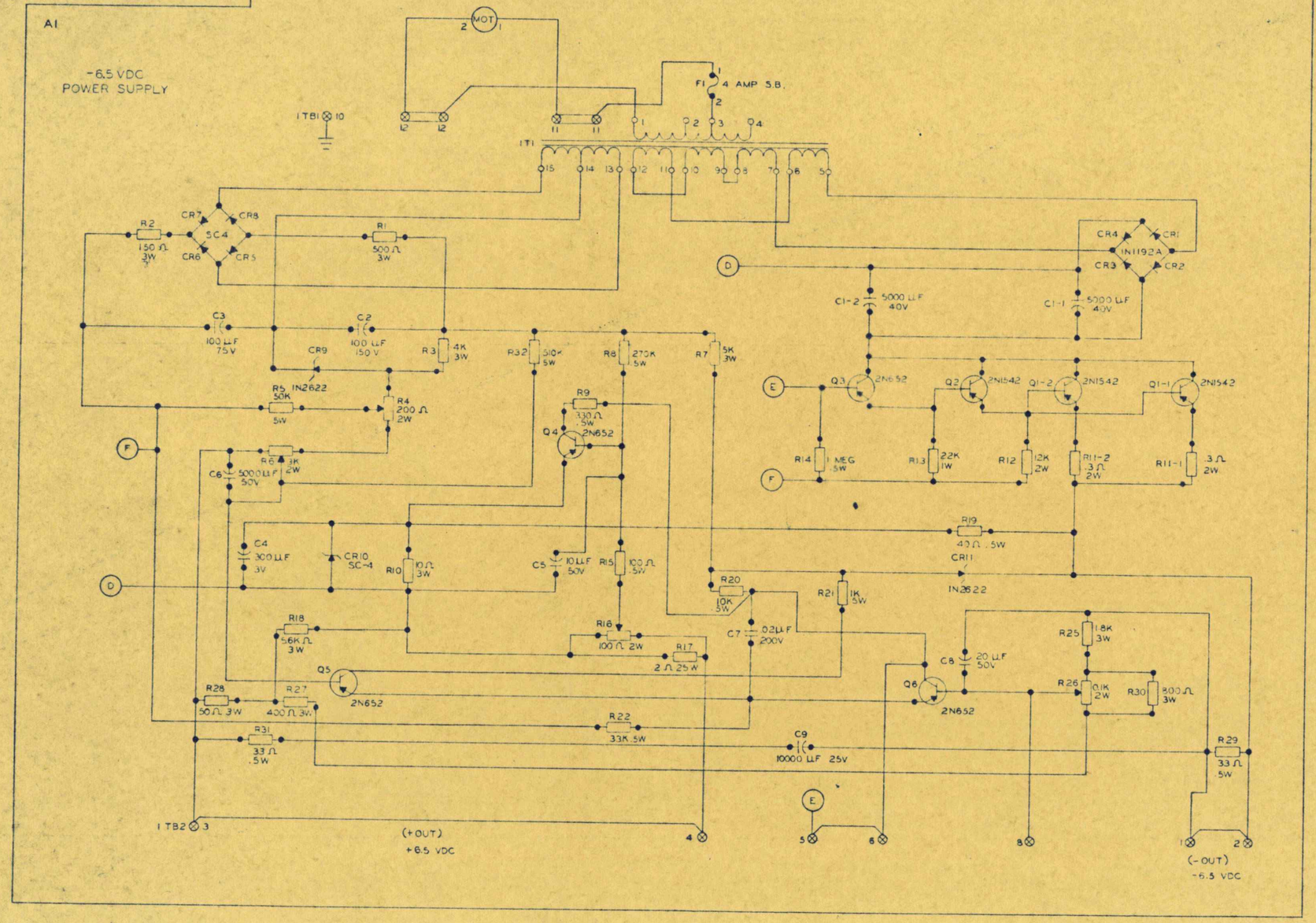
P5H DISTR CODE

Issued 5/29/65 SP

NSFC FORM 425 E (AUGUST 1960)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	#	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL

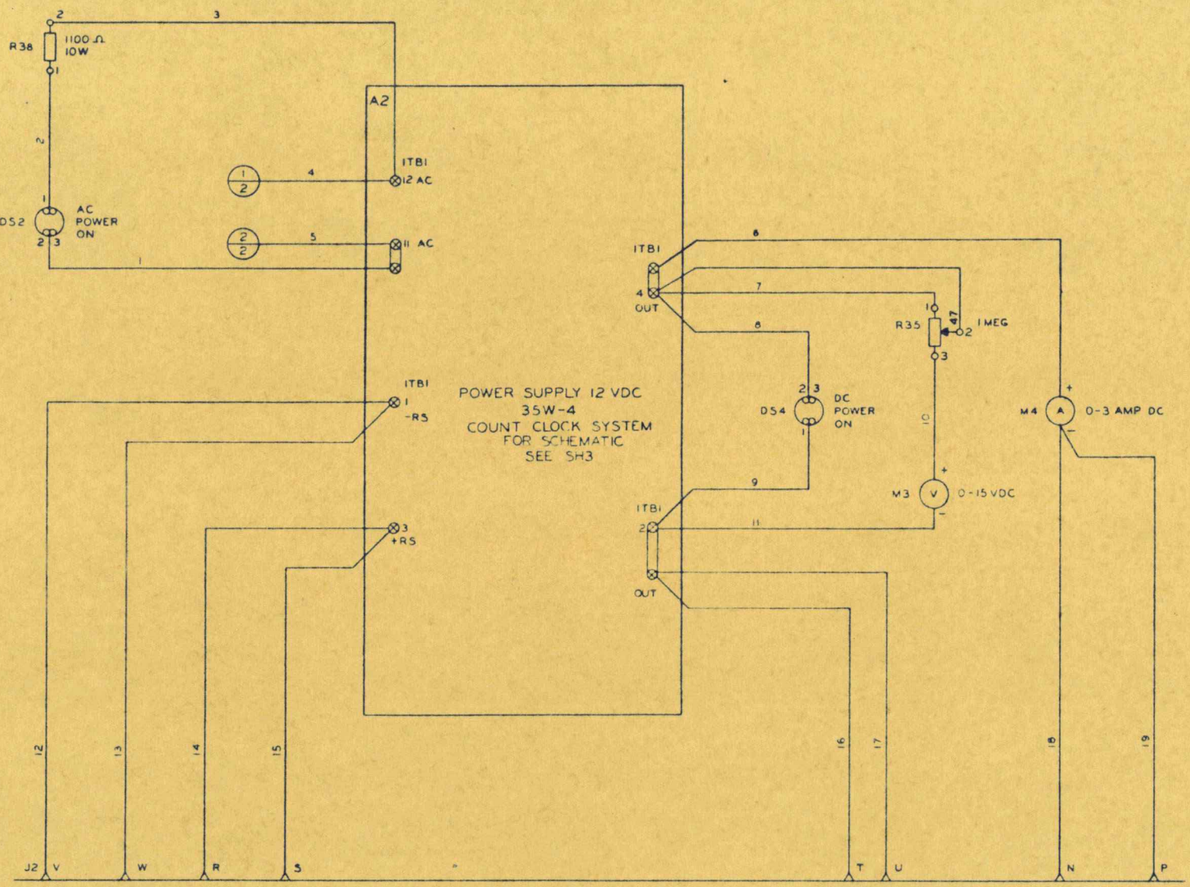


40M08250

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING APRIL 14,65	ADVANCED ELECTRICAL UNIT SCHEMATIC -6.5 & -8.5 VDC POWER SUP COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON APPLICATION	DRAFTSMAN / CHECKED / ENGR / STRESS / SUBMITTED / APPROVED / DIRECTOR	WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA; DWG SIZE D; 40M08250; SHEET 4 OF 4

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT DOES NOT THEREBY INCUR ANY RESPONSIBILITY OR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.		REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-23	8-3-65	
		B	INC EO 5P-2261	2-7-66	
		C	INC EO 5P 597	8-3-66	



NOTES:

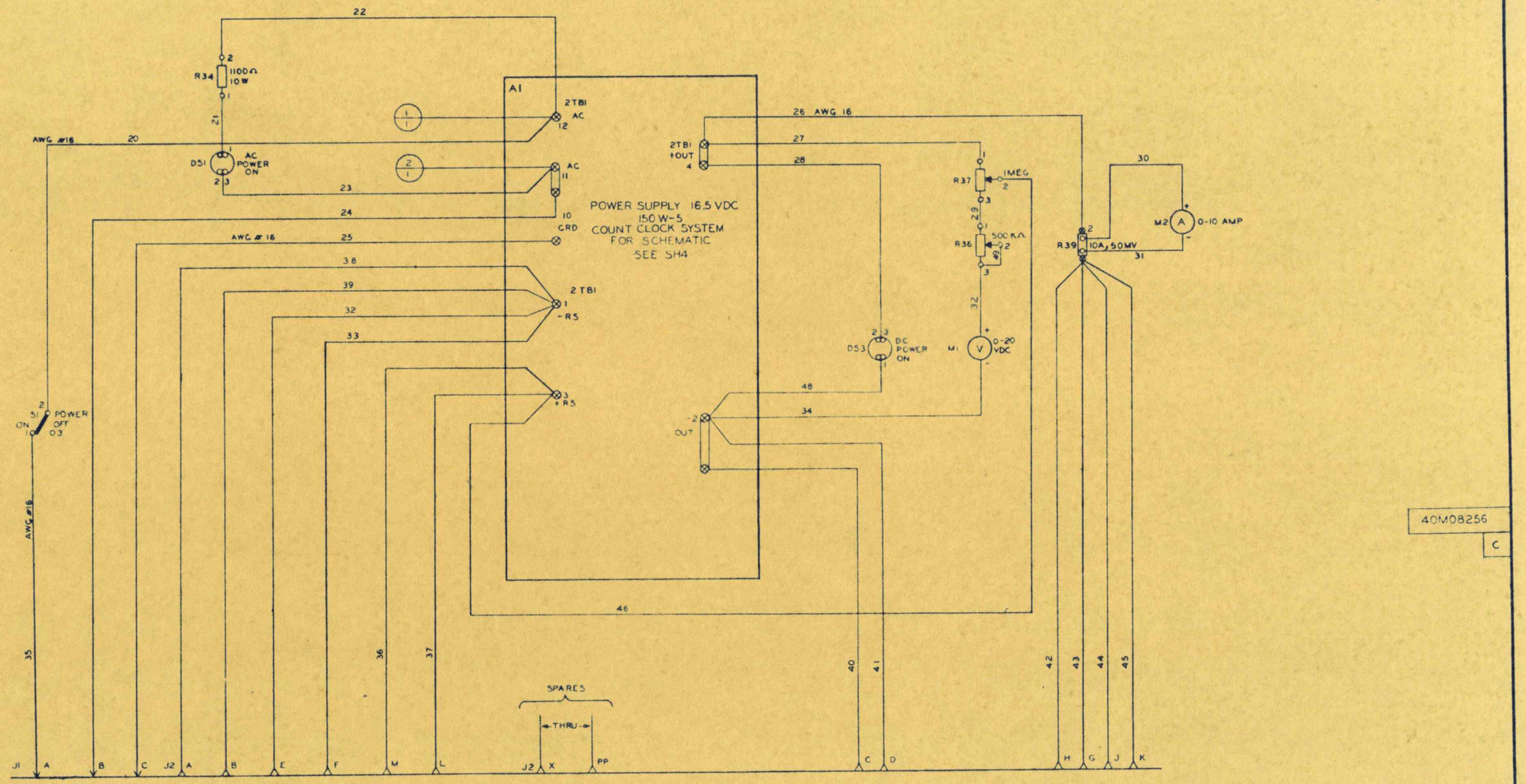
1. LAST WIRE NO. USED 49.
2. WIRE IN ACCORDANCE WITH STANDARDS DWG. 40M00200.
3. ALL LAMPS TO BE GREEN.
4. ALL WIRE TO BE NO. 20 AWG UNLESS OTHERWISE SPECIFIED.
5. LAST BALLOON NUMBER USED 2.
6. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
7. SHEET NO. 3 IS DOCUMENTATION OF BEHLMAN - INVAR POWER SUPPLY 35W-4. SHEET NO. 4 IS DOCUMENTATION OF BEHLMAN - INVAR POWER SUPPLY 150W-5.

40M08256
C

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING DEC 21, 1964	ADVANCED ELECTRICAL UNIT SCHEMATIC 12&16.5 VDC POWER SUPPLY COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
40M08214		MATERIAL			SIZE D — 40M08256
NEXT ASSY	USED ON	HEAT TREATMENT			
APPLICATION		FINAL PROTECTIVE FINISH	DIRECTOR	WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT	SHEET 1 OF 4

PART No.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-23	8/3/65	
		B	INC EO 5P-226	2-7-66	
		C	INC EO 5P-597	8-3-66	

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.



40M08256
C

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING DEC 22, 1964	ADVANCED ELECTRICAL UNIT SCHEMATIC 12A-16.5 VDC POWER SUPPLY COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS ____ DECIMALS ____ ANGLES ____	DRAFTING		DWG. SIZE D — 40M08256
40M08214		MATERIAL	CHECKED		
NEXT ASSY	USED ON	HEAT TREATMENT	SUBMITTED	WEIGHT CHECKED ____ DATE ____ CODE ____	
APPLICATION		FINAL PROTECTIVE FINISH	APPROVED DIRECTOR	SCALE ____ UNIT WEIGHT ____	SHEET 2 OF

Issued Supps 5P

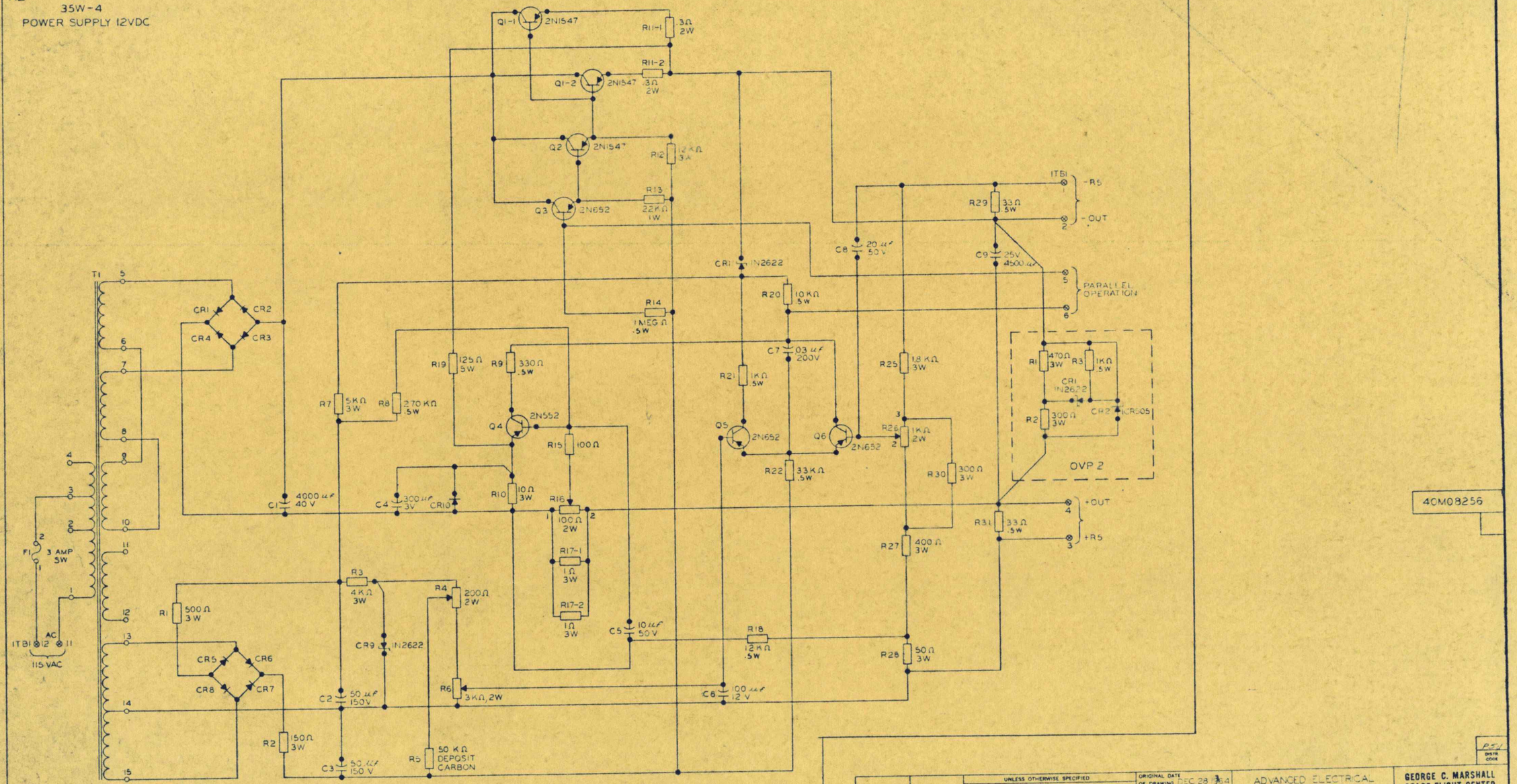
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	MF	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL

A2

35W-4

POWER SUPPLY 12VDC



40M08256

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING DEC 28 '64	ADVANCED ELECTRICAL UNIT SCHEMATIC 12&-16.5VDC POWER SUPPLY COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKED STRESS ENGINEER SUBMITTED APPROVED DIRECTOR		DWG. SIZE D 40M08256
40M08214		MATERIAL		WEIGHT CHECKER DATE CODE	
NEXT ASSY	USED ON	HEAT TREATMENT		SCALE UNIT WEIGHT	SHEET 3 OF
APPLICATION		FINAL PROTECTIVE FINISH			

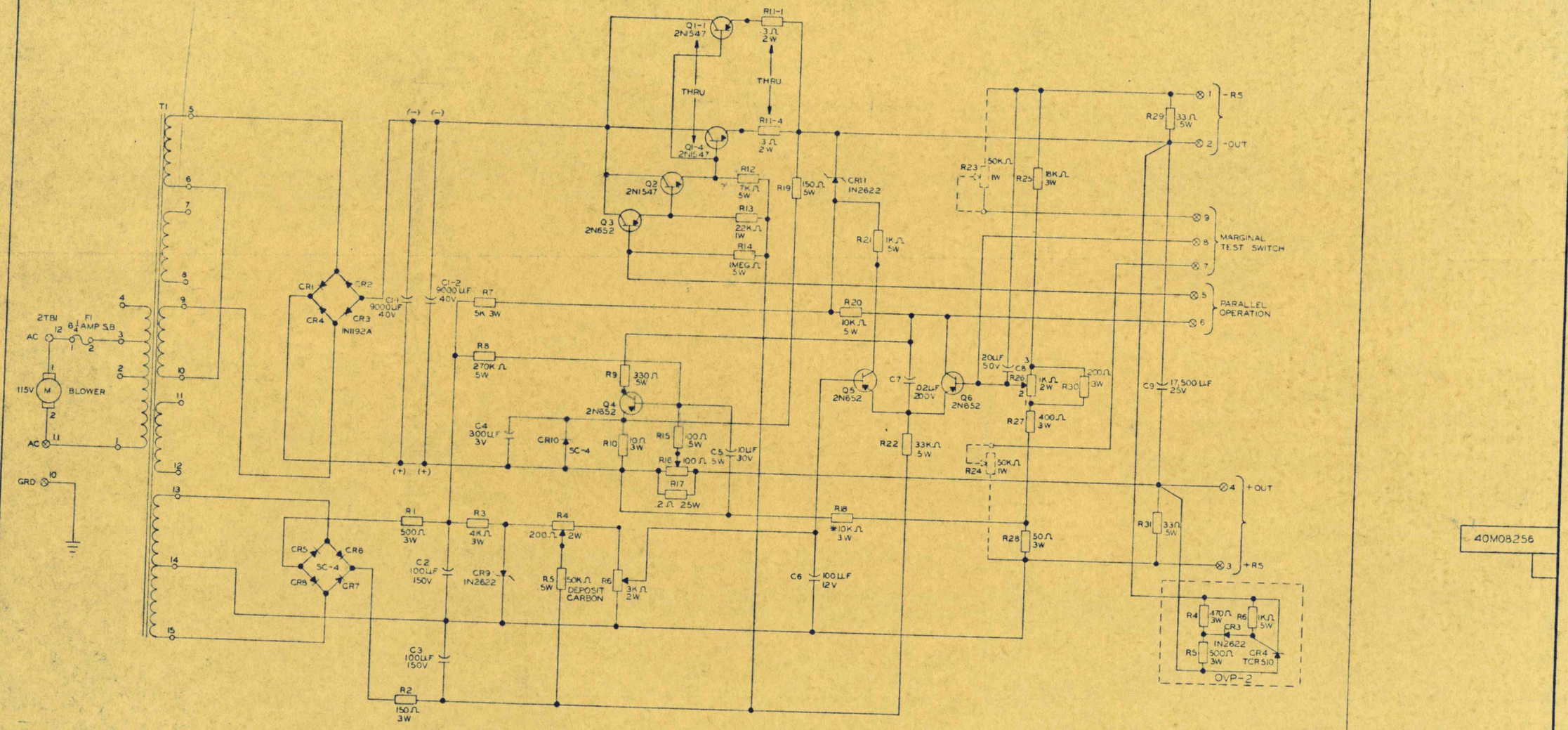
Issued 5/20/65 SP

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE IN ANY MANNER CONSTRUED AS LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	REVISIONS					
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL

A1

150W-5
POWER SUPPLY-16.5 VDC



40M08256

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APRIL 8, 65	ADVANCED ELECTRICAL UNIT SCHEMATIC 123-16.5 VCD POWER SUPPLY COUNT CLOCK TYPE I SATURN V
40M08214	MATERIAL	DRAFTSMAN	CHECKED
NEXT ASSY / USED ON	HEAT TREATMENT	ENGINEER	SUBMITTED
APPLICATION	FINAL PROTECTIVE FINISH	APPROVED	DIRECTOR
		WEIGHT CHECKER / DATE / CODE	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
		SCALE / UNIT WEIGHT	DWG SIZE D — 40M08256 — SHEET 4 OF 4

COPYMATION, INC. 181-3

MSFC FORM 483-B (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE, AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-113	9-18-65	
		B	INC EO 5P-272	2-14-66	
		C	INC EO 5P-369	2-14-66	

GRAY CODE

REAL TIME

HOURS X10 X1 MINUTES X10 X1 SECONDS X10 X1

INDICATOR BOARD M-6489 40M08486 FOR SCHEMATIC SEE SHEET 2

INDICATOR BOARD M-6489 40M08486 FOR SCHEMATIC SEE SHEET 2

INDICATOR BOARD M-6489 40M08486 FOR SCHEMATIC SEE SHEET 2

ELAPSED TIME M1

T1

A4 POWER SUPPLY 50 VDC 40M08326 FOR SCHEMATIC SEE SHEET 3

A5 POWER SUPPLY 28 VDC 40M08326 FOR SCHEMATIC SEE SHEET 4

Y1 OSCILLATOR 40M00335

TP1 TP2

S2 COMPUTER TEST

C1 .056 μF C2 .056 μF

TB1 TB2

S1 OFF ON POWER

S3 DDAS PLAY BACK NORMAL

BINARY CODED DECIMAL

DAYS HOURS MINUTES SECONDS

100 PPS CODE ENCODER 10 PPS RECORDER EXT 100 PPS CODED 2 KC RECORDER EXT 2 KC 2 KC TO ENCODER ØV STROBE LINE -8.5V ØV 2 KC TO ENCODER OSC ON IND 100 KC OUT OSC 5H IND 115 VAC 115 VAC GRD

NOTES:

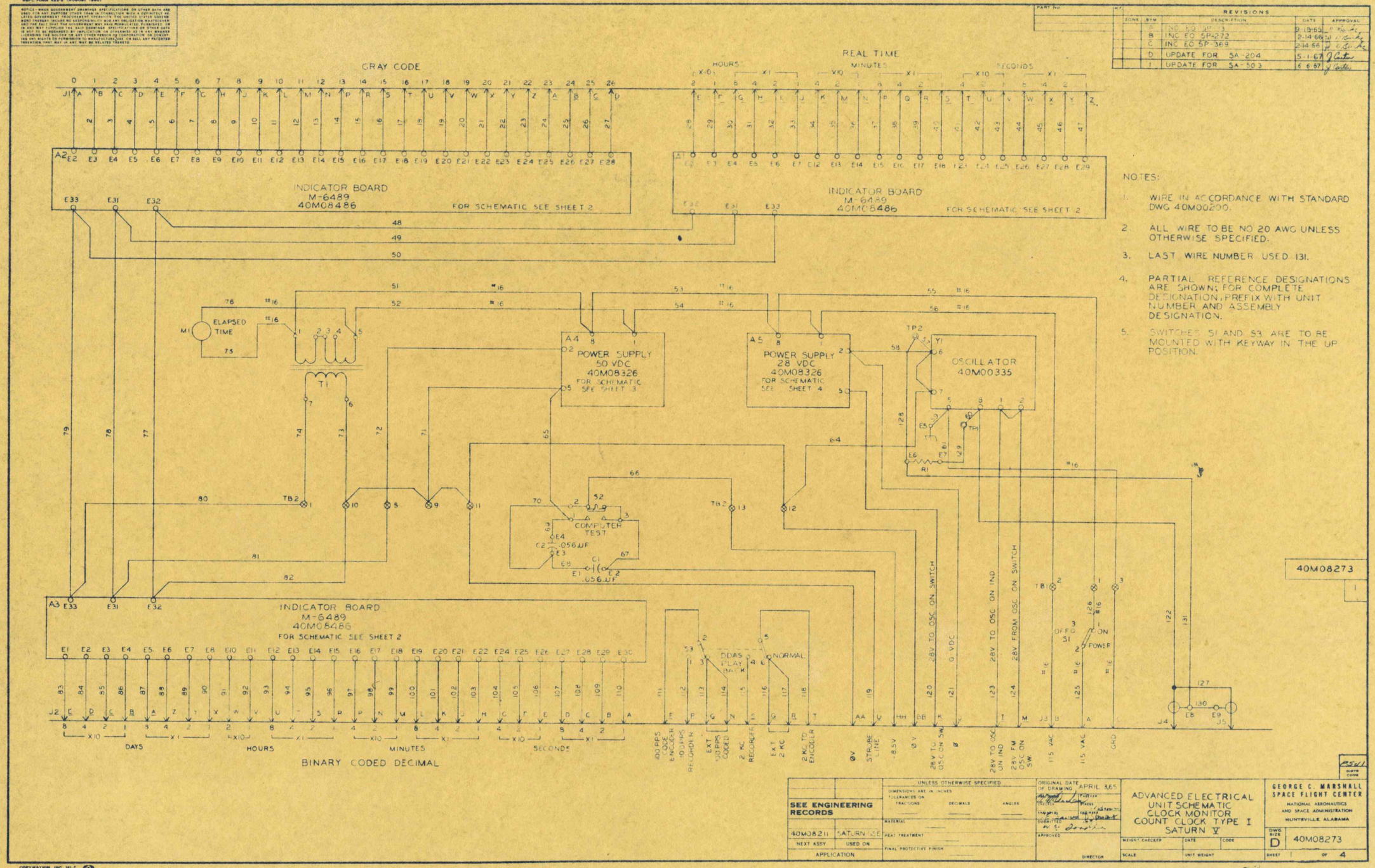
1. WIRE IN ACCORDANCE WITH STANDARD DWG 40M00200.
2. ALL WIRE TO BE NO 20 AWG UNLESS OTHERWISE SPECIFIED.
3. LAST WIRE NUMBER USED 126.
4. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
5. SWITCHES S1 AND S3 ARE TO BE MOUNTED WITH KEYWAY IN THE UP POSITION.

40M08273 C

N/A

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING APRIL 365	ADVANCED ELECTRICAL UNIT SCHEMATIC CLOCK MONITOR COUNT CLOCK TYPE I SATURN V
40M08211 SATURN IB	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED; DIRECTOR	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON			DWG SIZE D 40M08273
APPLICATION		WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT	SHEET 1 OF 4

COPYMATION, INC. 101-7



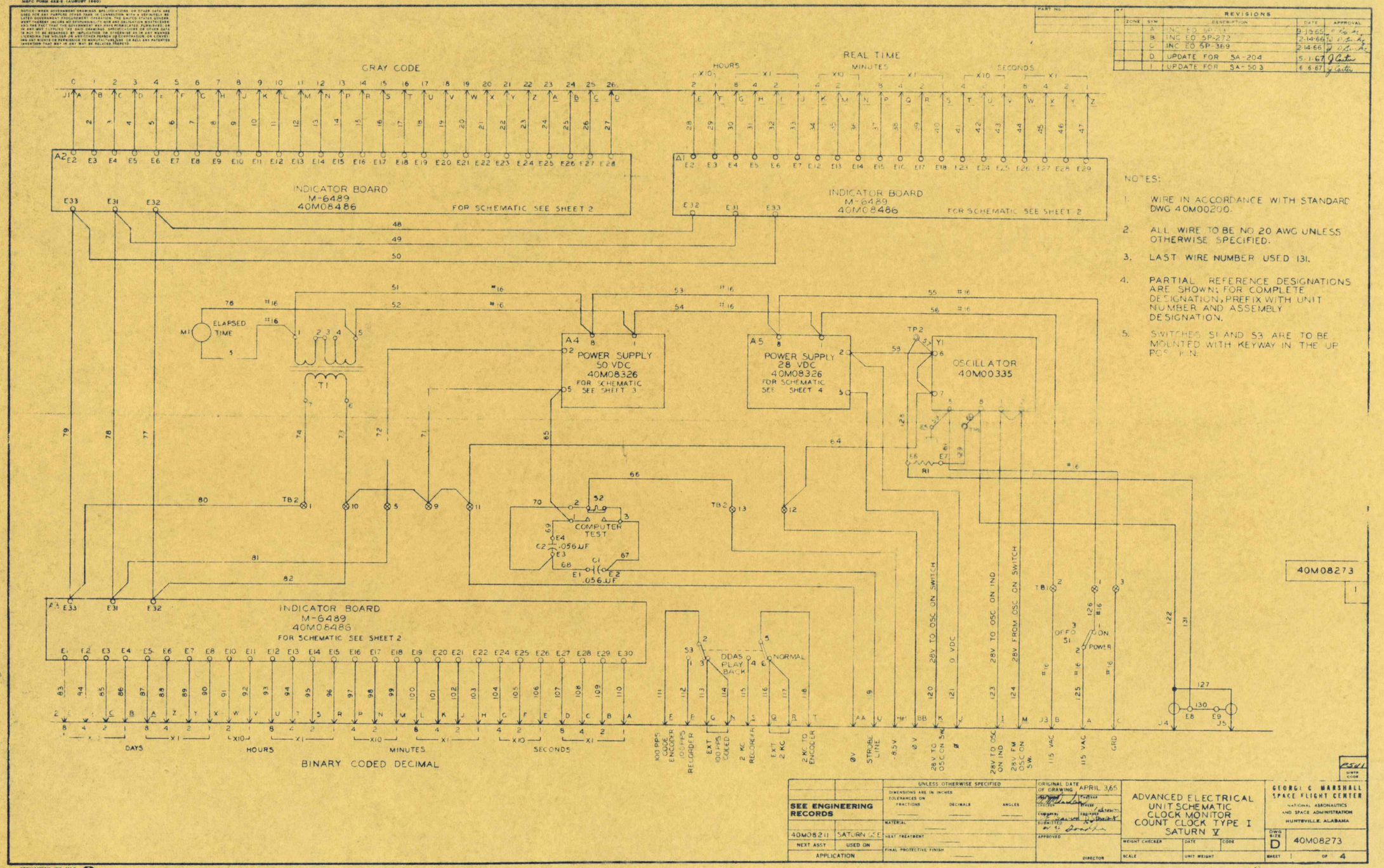
PART NO	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-253	9-19-65	
		B	INC EO 5P-272	2-14-66	
		C	INC EO 5P-369	2-14-66	
		D	UPDATE FOR SA-204	5-1-67	
		1	UPDATE FOR SA-503	6-6-67	

NOTES:

1. WIRE IN ACCORDANCE WITH STANDARD DWG 40M00200.
2. ALL WIRE TO BE NO 20 AWG UNLESS OTHERWISE SPECIFIED.
3. LAST WIRE NUMBER USED 131.
4. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
5. SWITCHES S1 AND S3 ARE TO BE MOUNTED WITH KEYWAY IN THE UP POSITION.

40M08273 1

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APRIL 1965	ADVANCED ELECTRICAL UNIT SCHEMATIC CLOCK MONITOR COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	DRAWN / CHECKED / STRESS / WEIGHTS / TRACED / SUBMITTED / APPROVED / DIRECTOR	WEIGHT CHECKER / SCALE	DATE / UNIT WEIGHT	CODE	DWG SIZE D 40M08273
40M08211	SATURN V SE	MATERIAL					SHEET 1 OF 4
NEXT ASSY	USED ON	HEAT TREATMENT					
APPLICATION		FINAL PROTECTIVE FINISH					



REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC EO 5P-15	9-13-65	
	B	INC EO 5P-272	2-14-66	
	C	INC EO 5P-369	2-14-66	
	D	UPDATE FOR SA-204	5-1-67	
	I	UPDATE FOR SA-503	6-6-67	

NOTES:

1. WIRE IN ACCORDANCE WITH STANDARD DWG 40M00200.
2. ALL WIRE TO BE NO 20 AWG UNLESS OTHERWISE SPECIFIED.
3. LAST WIRE NUMBER USED 131.
4. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
5. SWITCHES S1 AND S3 ARE TO BE MOUNTED WITH KEYWAY IN THE UP POSITION.

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES
40M08211 SATURN V	MATERIAL
NEXT ASSY USED ON	HEAT TREATMENT
APPLICATION	FINAL PROTECTIVE FINISH

ORIGINAL DATE OF DRAWING APRIL 3,65

ADVANCED ELECTRICAL UNIT SCHEMATIC CLOCK MONITOR COUNT CLOCK TYPE I SATURN V

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

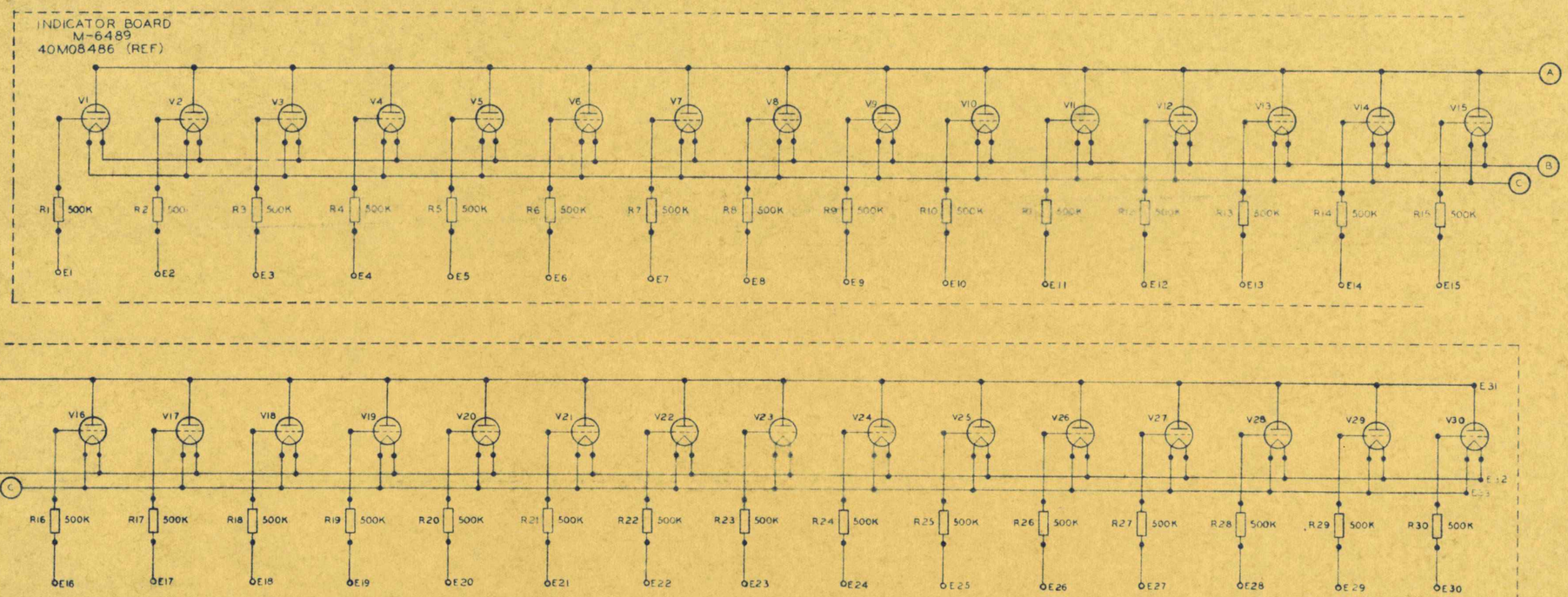
DWG SIZE D — 40M08273 — SHEET 1 OF 4

40M08273 | 1

Change Date
26 June 1967

NOTICE - WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M08273

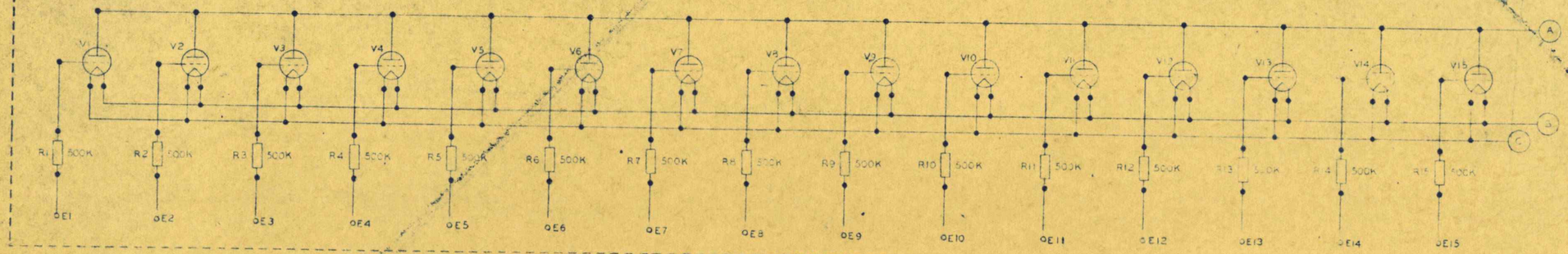
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED	ADVANCED ELECTRICAL UNIT SCHEMATIC, CLOCK MONITOR COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE ALABAMA
SATURN GSE			DWG SIZE D — 40M08273
NEXT ASSY	USED ON		
APPLICATION			SHEET 2 OF

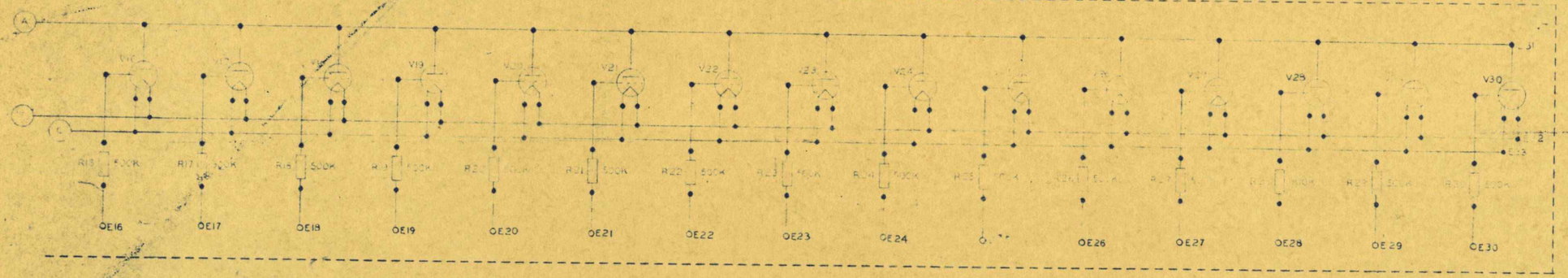
Change Date
26 June 1967

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED, BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	REVISIONS			
	ZONE SYM	DESCRIPTION	DATE	APPROVAL

INDICATOR BOARD
M-6489
40M08486 (REF)





40M08273 3

SEE ENGINEERING RECORDS

SATURNSE

ADVANCED ELECTRICAL UNIT SCHEMATIC CLOCK MOUNT P. COUNT CLOCK TYPE I SATURN V

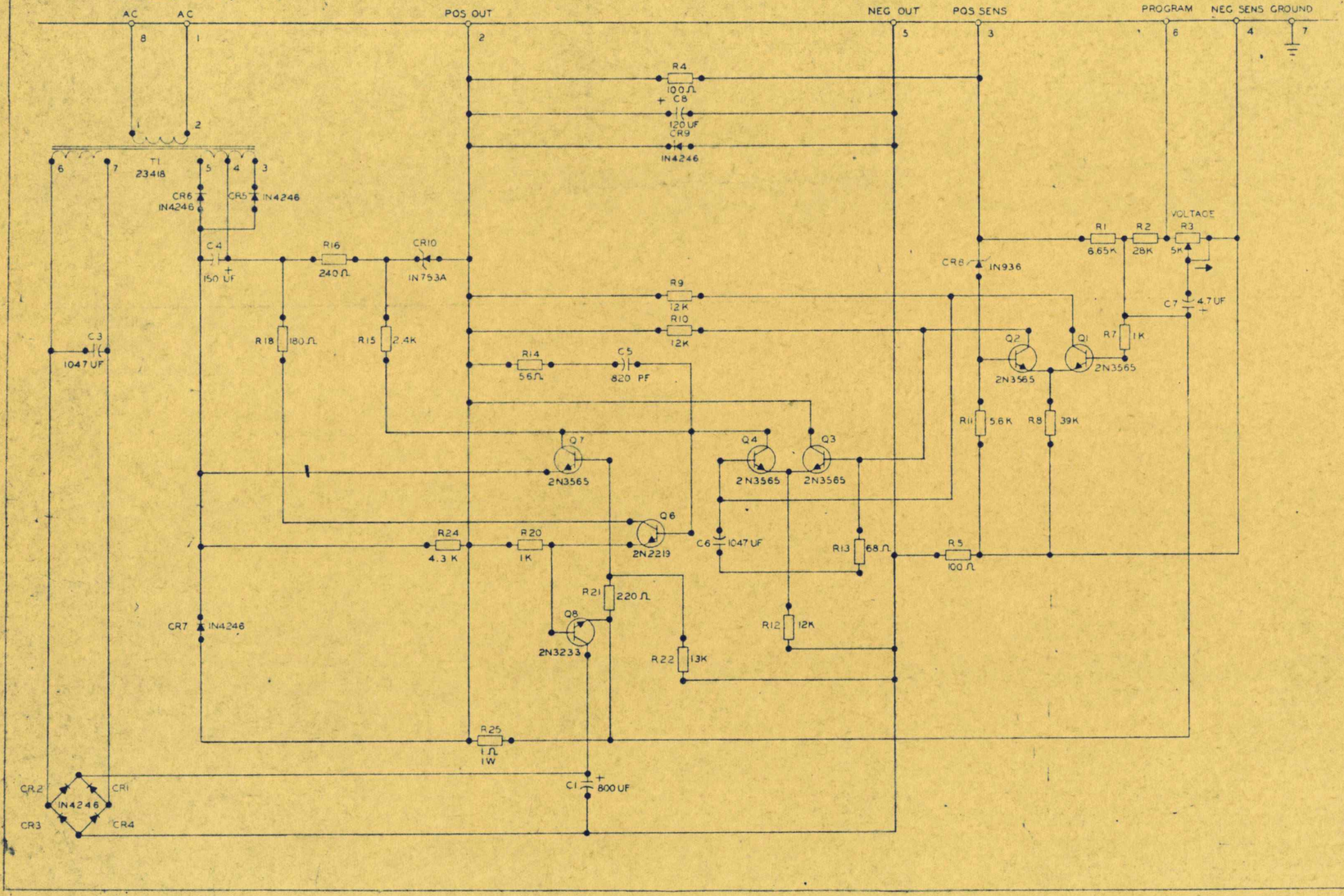
GEORGE C. MARSHALL SPACE FLIGHT CENTER

D# 40M05273

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN A CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY OR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL

50V DC POWER SUPPLY
(8X50, NO. 6
AC DC ELECTRONICS)



40M09273

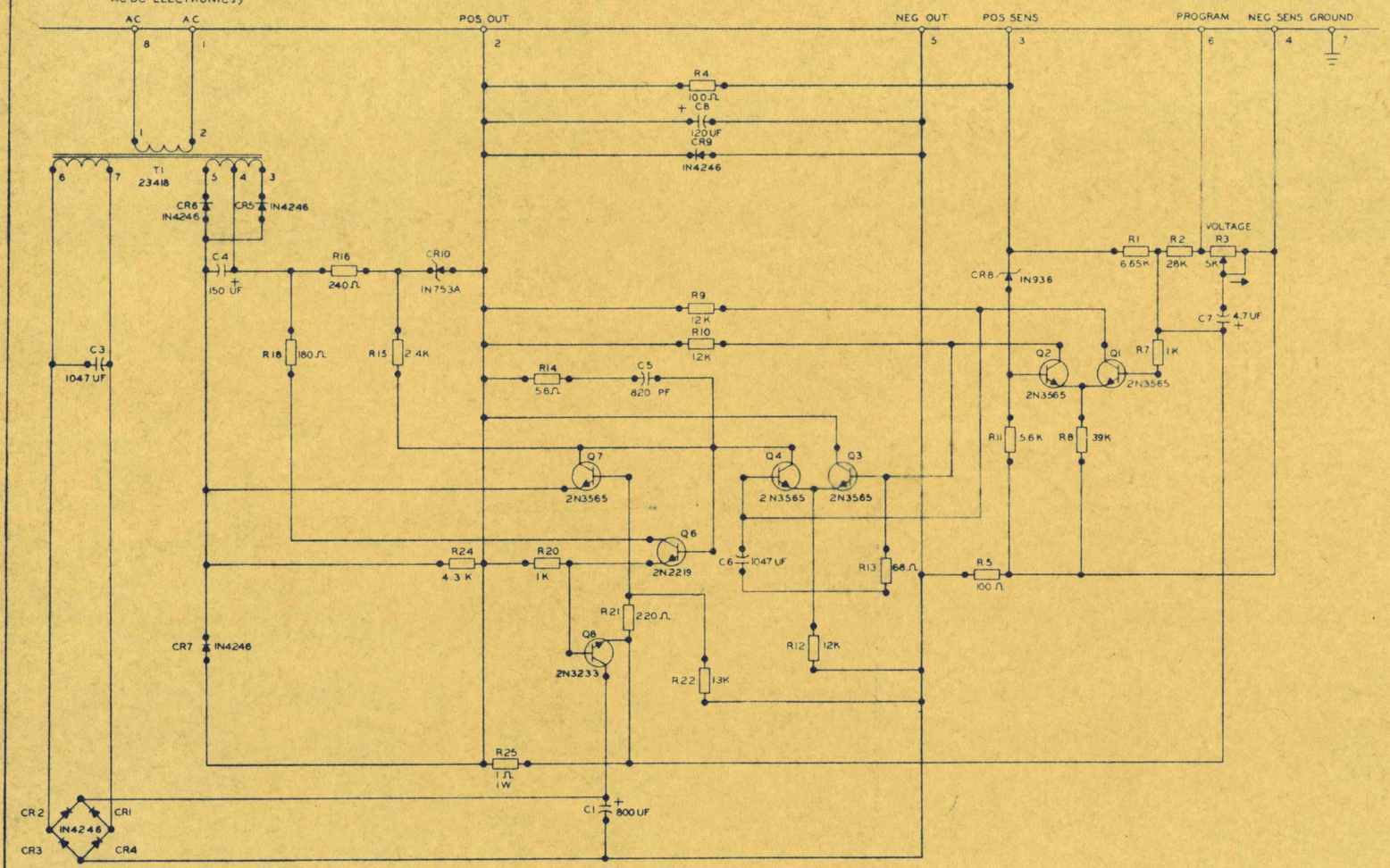
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APR 5,1965	ADVANCED ELECTRICAL SCHEMATIC CLOCK MONITOR COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY: SATURNSE	MATERIAL	DRAFTSMAN		
USED ON	HEAT TREATMENT	CHECKER		
APPLICATION	FINAL PROTECTIVE FINISH	STRESS		DWG SIZE D — 40M03273
		SUBMITTED		
		APPROVED	WEIGHT CHECKER / DATE / CODE	SHEET 3 OF
		DIRECTOR	SCALE / UNIT WEIGHT	

I.C. 6/21/65 SP

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO	M F	REVISIONS			
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL

50V DC POWER SUPPLY
(BX50, NO. 6
AC DC ELECTRONICS)



40M08273

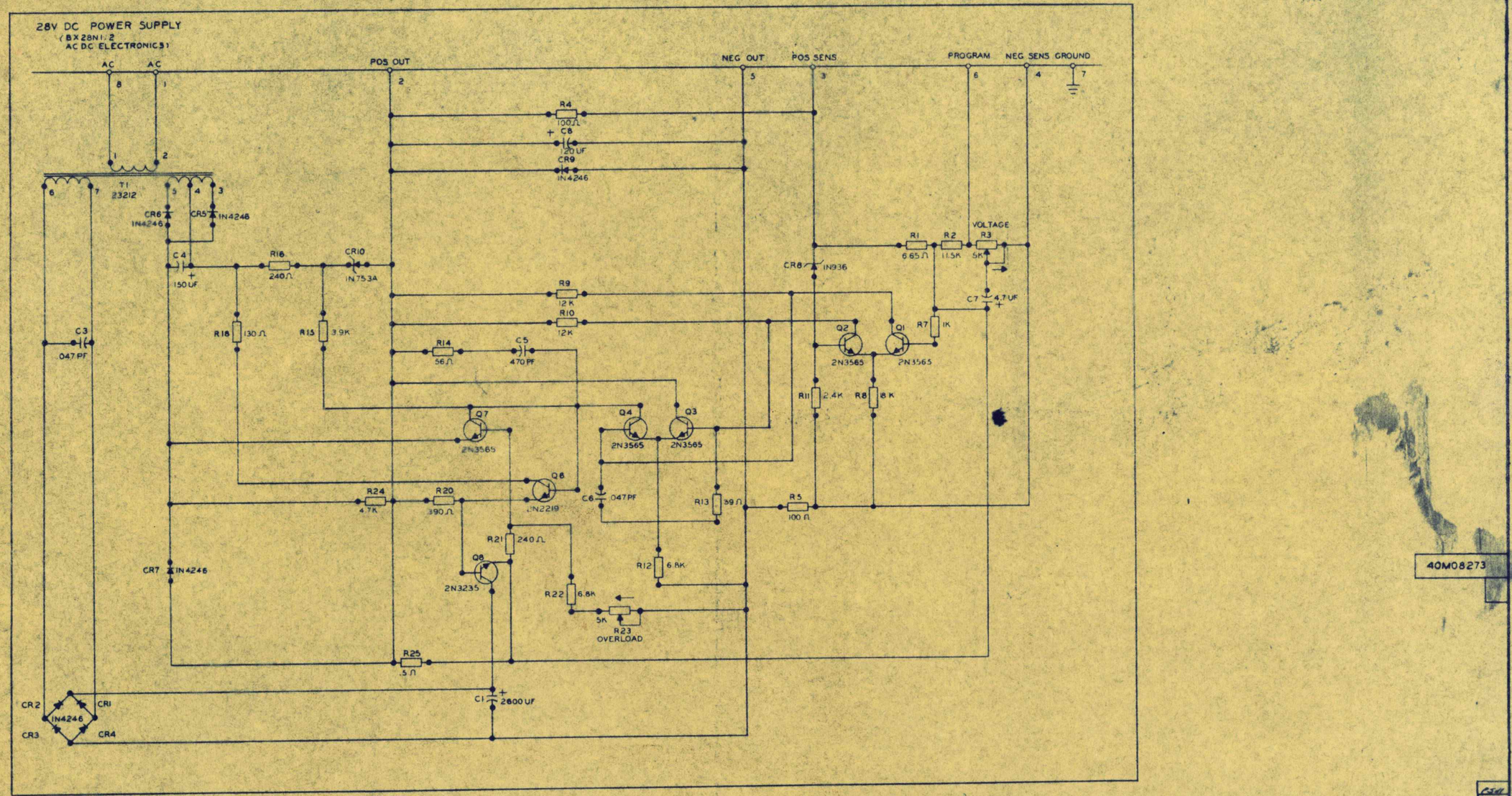
		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APR 5, 1965	ADVANCED ELECTICAL UNIT SCHEMATIC, CLOCK MONITOR COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	DRAFTSMAN C. Burke; CHECKED; STRESS; ENGINEER; SUPERV. E. Francis; SUBMITTED W. H. Brooks; APPROVED; DIRECTOR		NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
	SATURN SE	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH		WEIGHT CHECKED / DATE / CODE SCALE / UNIT WEIGHT	DWG SIZE D — 40M08273
NEXT ASSY	USED ON				SHEET 3 OF
APPLICATION					

i.c. 4/29/65 SP

Change Date
26 June 1967

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	W.O.	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M08273

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APR 5,1965	ADVANCED ELECTRICAL UNIT SCHEMATIC, CLOCK MONITOR COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
SATURNSE	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED	WEIGHT CHECKED; SCALE	Dwg SIZE D	40M08273
NEXT ASSY / USED ON		DIRECTOR	DATE; UNIT WEIGHT	CODE	SHEET 4 OF 4
APPLICATION					

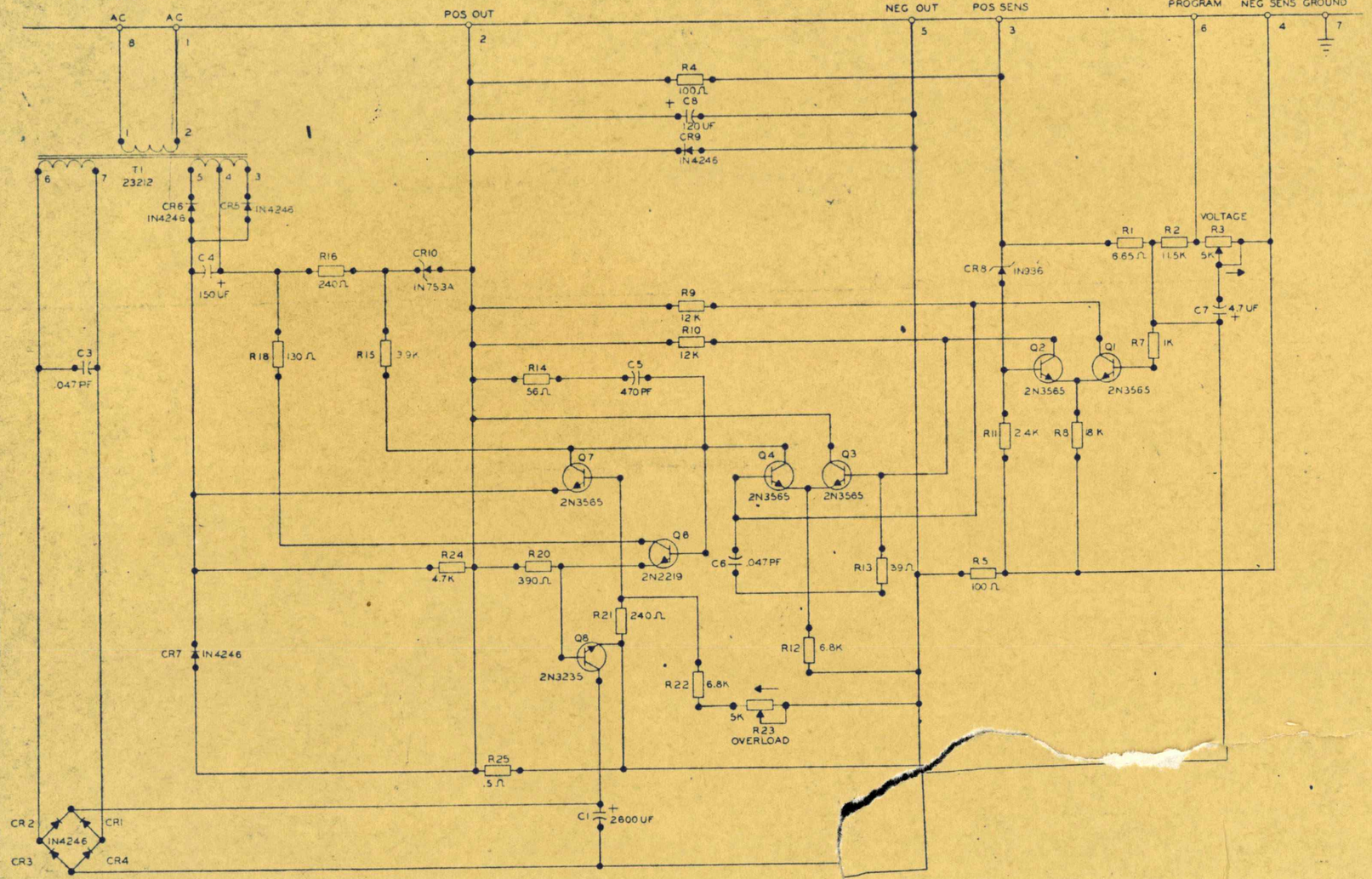
Change Date
26 June 1967

NSFC FORM 224-6 (AUGUST 1960)

NOTICE: UNLESS GOVERNMENT CONTRACT, SPECIFICATIONS OR OTHER DATA ARE EXPRESSLY MADE A PART OF ORDER ISSUED IN CONNECTION WITH A SPECIFIC CONTRACT WITH GOVERNMENT AGENCY OPERATING THE UNITED STATES GOVERNMENT PROPERTY, INC. IS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FURNISHED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	MF	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL

28V DC POWER SUPPLY
(BX28N1.2
AC DC ELECTRONICS)



40M08273

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING APR 5,1965	ADVANCED ELECTRICAL UNIT SCHEMATIC, CLOCK MONITOR COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
	MATERIAL	DRAFTSMAN / CHECKER			
	HEAT TREATMENT	STRESS			
SATURN SE	FINAL PROTECTIVE FINISH	ENGINEER / SUPV.			
NEXT ASSY / USED ON		SUBMITTED			
APPLICATION		APPROVED / DIRECTOR	WEIGHT CHECKER / DATE / CODE	DWG SIZE D	40M08273
			SCALE / UNIT WEIGHT	SHEET 4 OF	

DIFTMATION, INC. 1961

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC EO SP 167	12-9-65	
	B	INC EO SP-312	12-9-65	
	C	INC EO SP-521	2-9-66	
	D	INC EO SP-556	2-9-66	
	E	INC EO SP-607	8-1-66	

SECONDS X1

RESET 9

RESET ZERO

COUNT UP

COUNT DOWN

NOTES

1. LAST BUBBLE NUMBER USED IS 39.
2. REFERENCE DRAWINGS: WIRING LIST 40M08264.
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION (S).

40M08274

E

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MARCH 21, 65	LOGIC DIAGRAM BINARY CODED DECIMAL COUNTER COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON / APPLICATION	APPROVED / DIRECTOR	WEIGHT / CHECKED / DATE / CODE / SCALE / UNIT WEIGHT	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
			SIZE D — 40M08274 — SHEET 1 OF 9

Issued 6/17/65 SP

NEFC FORM 422-3 (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	SEE SHEET ONE	2-9-65	
		C	SEE SHEET ONE	2-9-66	
		D	SEE SHEET ONE	2-9-66	

SECONDS X 10

FROM J1-S

FROM J1-R

RESET 5

RESET ZERO

COUNT UP

COUNT DOWN

GROUND BUS

FROM J1-G

40M08274 D

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAR. 31, 65	LOGIC DIAGRAM BINARY CODED DECIMAL COUNTER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON / APPLICATION		DRAWN / CHECKED / ENGINEER / SUBMITTED / APPROVED / DIRECTOR	WEIGHT CHECKER / SCALE / DATE / CODE / UNIT WEIGHT	DWG SIZE D — 40M08274 — SHEET 2 OF

COPYMATION, INC. 101-2

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE, AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS				
PART NO.	#	ZONE	SYM	DESCRIPTION / DATE / APPROVAL
		C		SEE SHEET ONE — 2-9-66
		D		SEE SHEET ONE — 2-9-66

MINUTE X 1

RESET 9

RESET ZERO

COUNT UP

COUNT DOWN

GROUND BUS

FROM J1-N

FROM J1-G

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING MAR 30 65	LOGIC DIAGRAM BINARY CODED DECIMAL COUNTER COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON: APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	DRAFTSMAN; CHECKER; ENGINEER; SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKER; SCALE; DATE; CODE; UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE ALABAMA

DWG SIZE D — 40M08274 — SHEET 3 OF

40M08274 D

COPYMATION, INC. 101-7

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		B	SEE SHEET ONE	2-9-65	
		C	SEE SHEET ONE	2-9-66	
		D	SEE SHEET ONE	2-9-66	

MINUTES X 10

FROM J1-S

FROM J1-R

FROM J1-N

FROM J1-S

RESET 5

RESET ZERO

COUNT UP

COUNT DOWN

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING MARCH 21, 65	LOGIC DIAGRAM BINARY CODED DECIMAL COUNTER COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON	MATERIAL	DRAFTSMAN	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
APPLICATION	HEAT TREATMENT	CHECKED	DWG SIZE D — 40M08274
	FINAL PROTECTIVE FINISH	ENGINEER	WEIGHT CHECKED / DATE / CODE
		SUBMITTED	SCALE / UNIT WEIGHT
		APPROVED	SHEET 4 OF
		DIRECTOR	

40M08274 D

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	SEE SHEET ONE	12-9-65	
		C	SEE SHEET ONE	1-9-66	
		D	SEE SHEET ONE	2-9-67	

HOURS X T

RESET 3

RESET 9

RESET ZERO

COUNT UP

COUNT DOWN

FROM J1-L

FROM J1-S

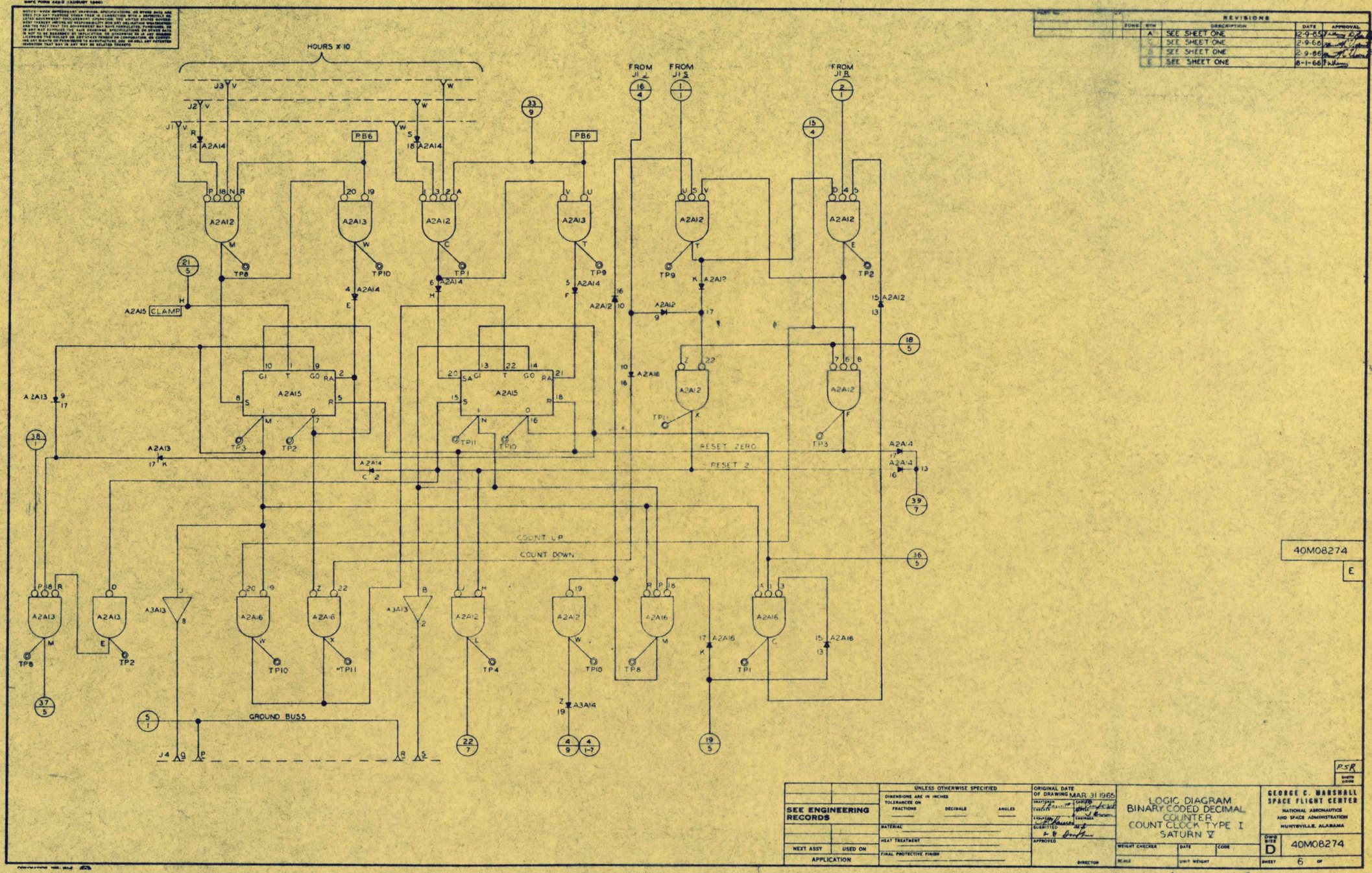
FROM J1-R

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING 1/4/65	LOGIC DIAGRAM BINARY CODED DECIMAL COUNTER COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON	MATERIAL	DRAFTING	
APPLICATION	HEAT TREATMENT	ENGINEER	
	FINAL PROTECTIVE FINISH	APPROVED	
		DIRECTOR	WEIGHT CHECKER / DATE / CODE
			SCALE / UNIT WEIGHT / SHEET 5 OF

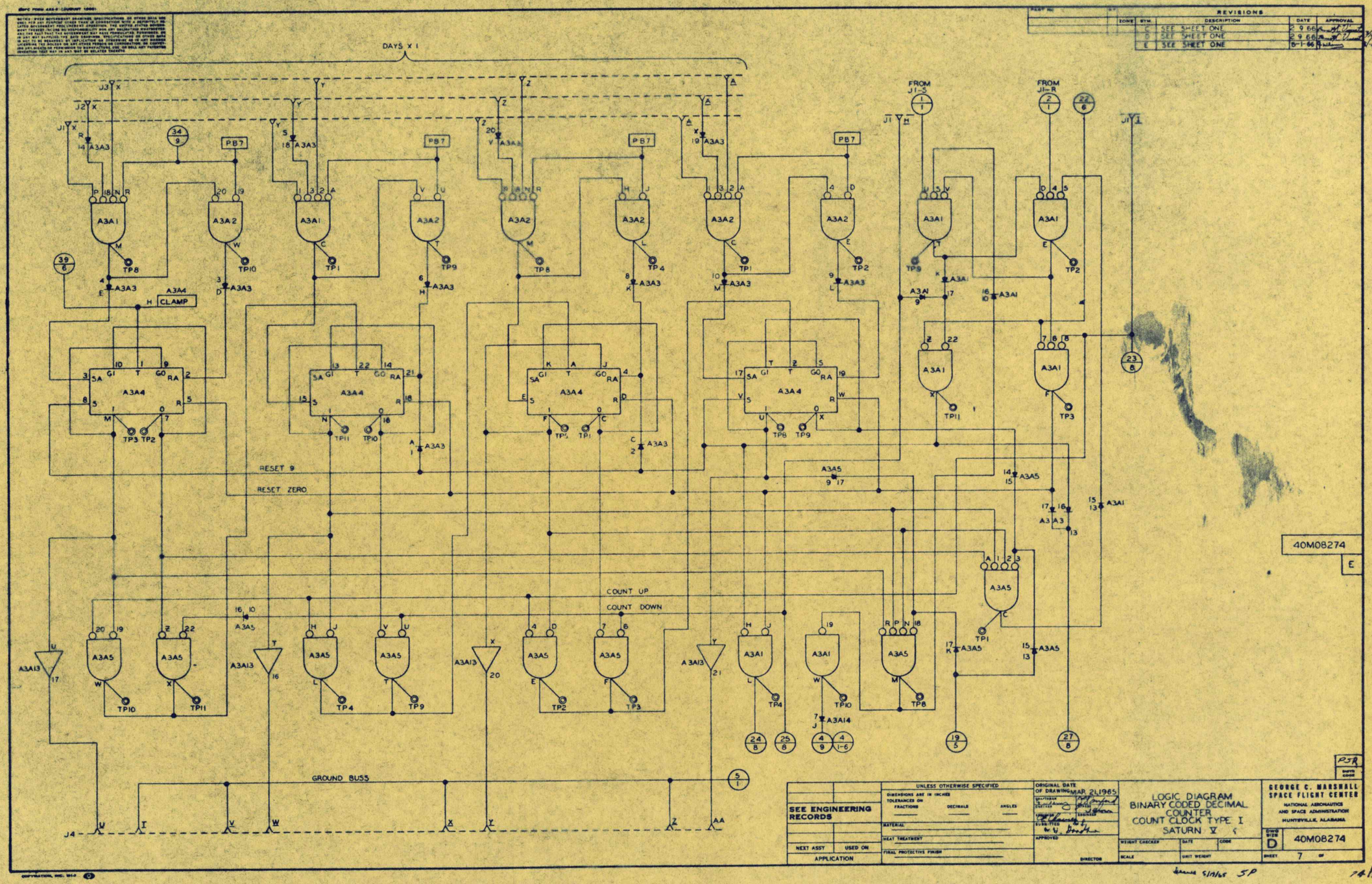
GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40M08274

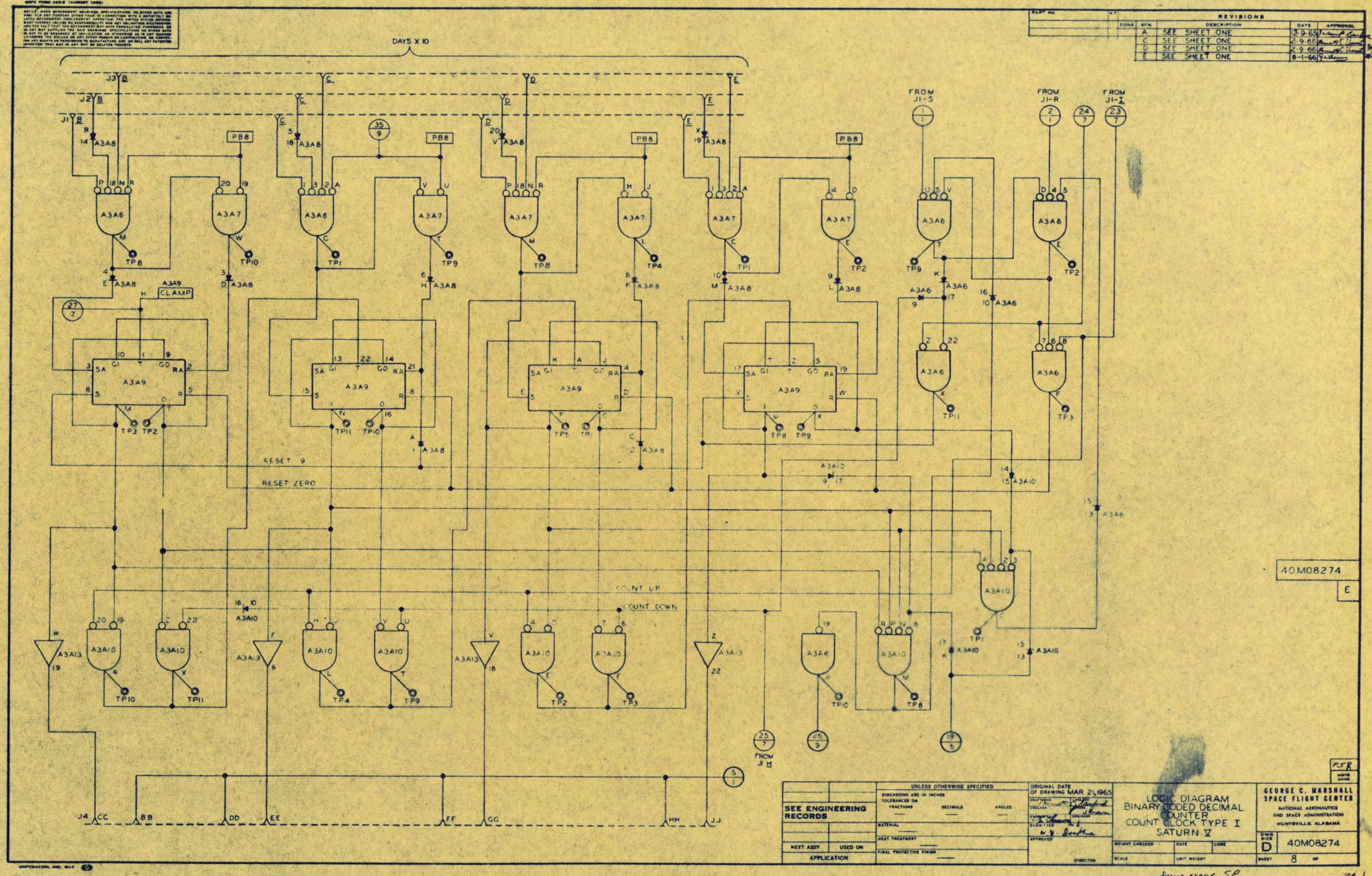
40M08274 D



Change Date
30 November, 1966



Change Date
30 November, 1966



REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	SEE SHEET ONE	2-9-66	
C	SEE SHEET ONE	2-9-66	
D	SEE SHEET ONE	2-9-66	
E	SEE SHEET ONE	8-1-66	

SEE ENGINEERING RECORDS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS DECIMALS ANGLES

ORIGINAL DATE OF DRAWING MAR 21, 1965

LOGIC DIAGRAM
BINARY CODED DECIMAL COUNTER
COUNT CLOCK TYPE I
SATURN V

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

SIZE D — 40M08274 — E

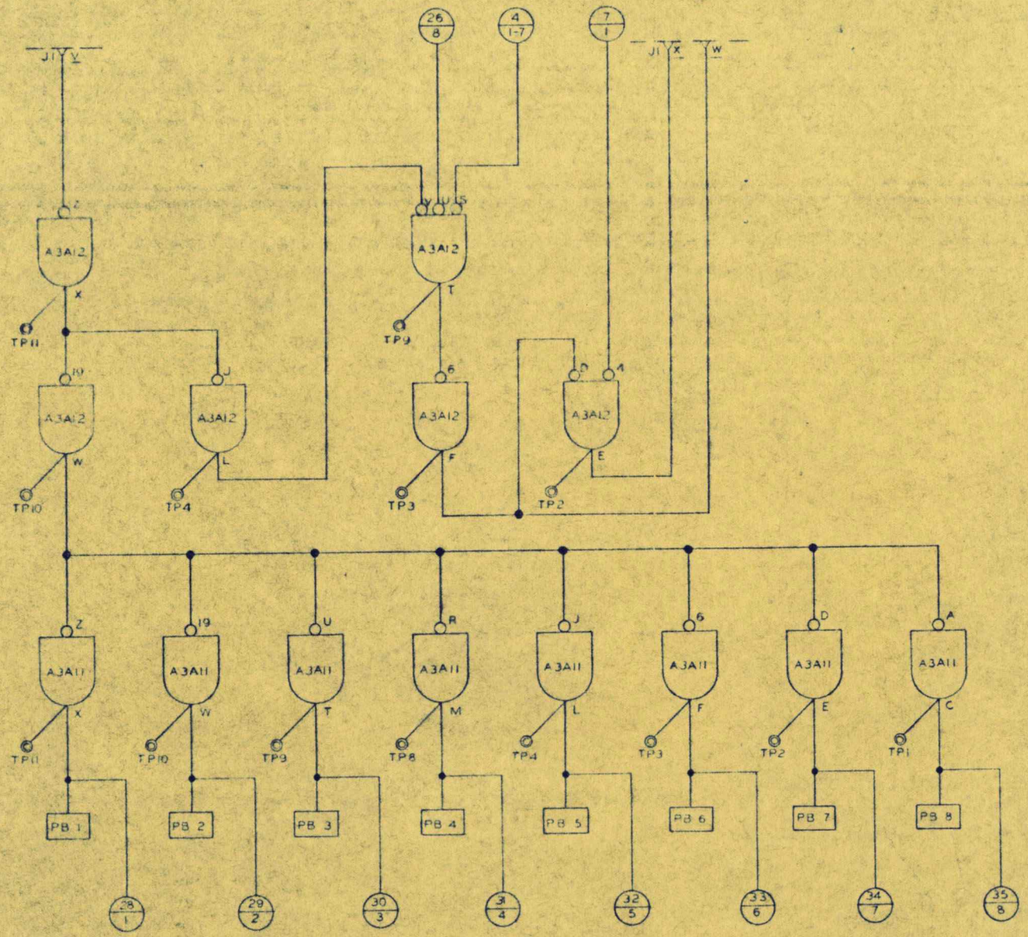
SHEET 8

Drawn 3/17/65 SP

Change Date
30 November, 1966

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M08274

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING: APR 21,65	LOGIC DIAGRAM BINARY CODED DECIMAL COUNTER COUNT CLOCK TYPE I SATURN V
NEXT ASSY: USED ON APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	DRAFTSMAN; CHECKER; ENGINEER; SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE; UNIT WEIGHT

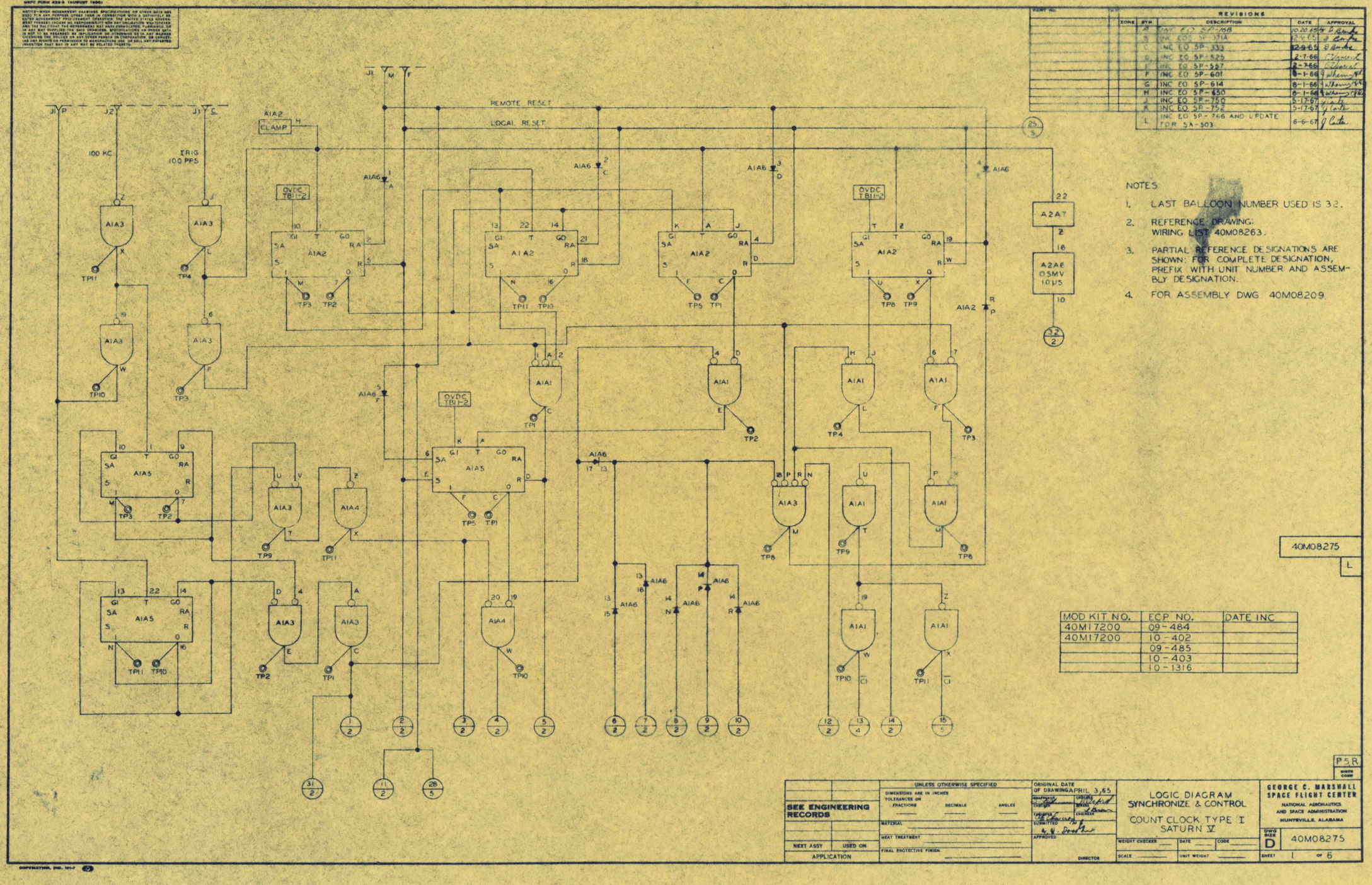
GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40M08274 — SHEET 9 OF 9

I 4.8.03
F-T-R

Issued 5/17/65 SP

GOFFMATOR, INC. N.Y.



REVISIONS			
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC EO SP-458	10-20-65	D Burke
	B	INC EO SP-511A	2-6-66	D Burke
	C	INC EO SP-533	12-9-65	D Burke
	D	INC EO SP-525	2-7-66	Wheeler
	E	INC EO SP-527	2-7-66	Wheeler
	F	INC EO SP-601	8-1-66	Wheeler
	G	INC EO SP-614	8-1-66	Wheeler
	H	INC EO SP-650	8-1-66	Wheeler
	J	INC EO SP-750	5-17-67	Wheeler
	K	INC EO SP-752	5-17-67	Wheeler
	L	INC EO SP-746 AND UPDATE FOR SA-503	6-6-67	Wheeler

NOTES

1. LAST BALLOON NUMBER USED IS 32.
2. REFERENCE DRAWING: WIRING LIST 40M08263.
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
4. FOR ASSEMBLY DWG 40M08209.

40M08275 L

MOD KIT NO.	ECP NO.	DATE INC
40M17200	09-484	
40M17200	10-402	
	09-485	
	10-403	
	10-1316	

P5R

SEE ENGINEERING RECORDS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS DECIMALS ANGLES
MATERIAL
HEAT TREATMENT
FINAL PROTECTIVE FINISH
NEXT ASSY USED ON APPLICATION

ORIGINAL DATE OF DRAWING APRIL 3, 65
APPROVED DIRECTOR

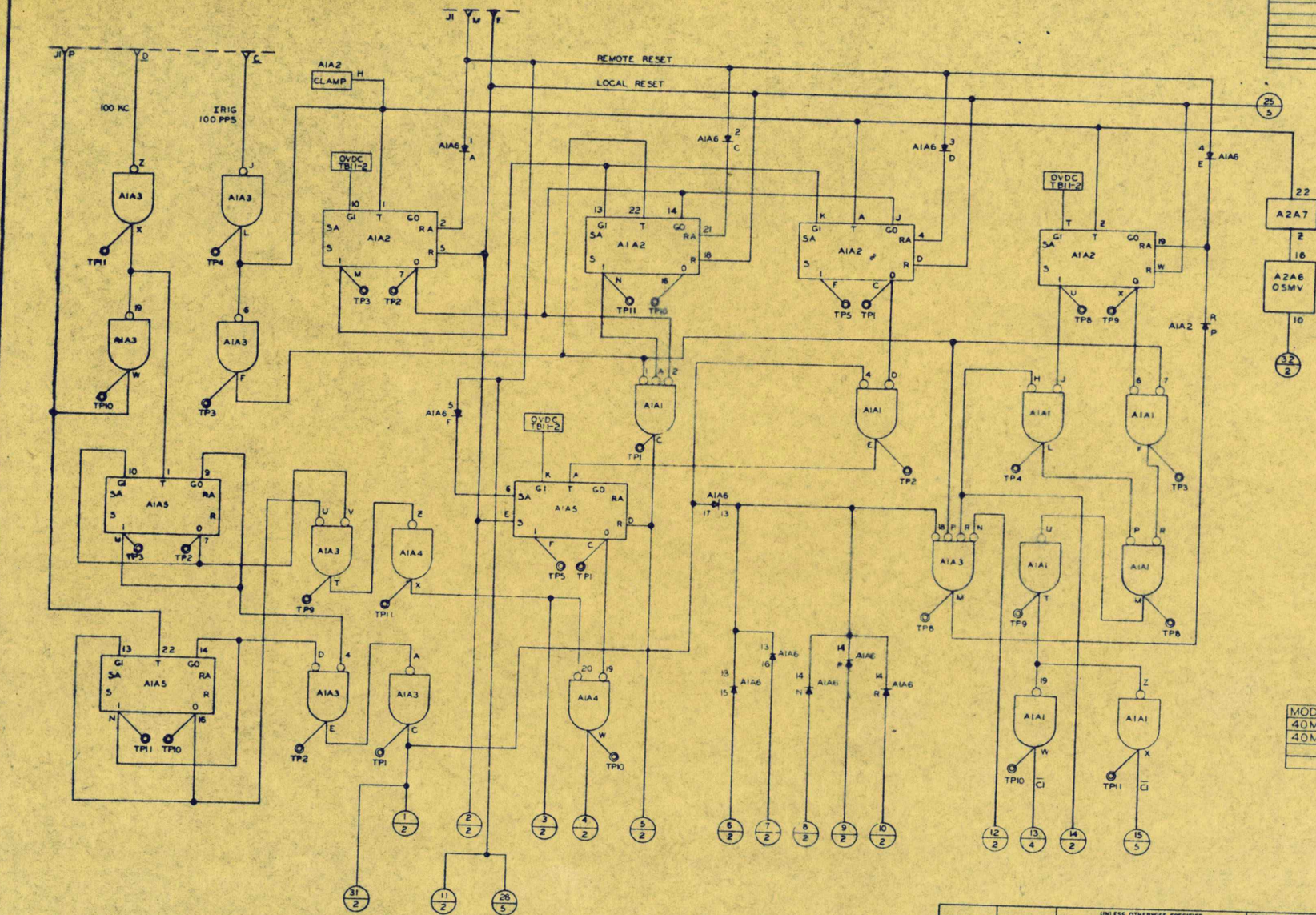
LOGIC DIAGRAM SYNCHRONIZE & CONTROL
COUNT CLOCK TYPE I SATURN V

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D 40M08275
SHEET 1 OF 6

Change Date
26 June 1967

REVISIONS			
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC EO 5P-48	10-20-65	D Bentley
	B	INC EOS 5P-371A	2-9-66	D Bentley
	C	INC EO 5P-353	2-9-66	D Bentley
	D	INC EO 5P-525	2-7-66	C Vincent
	E	INC EO 5P-527	2-7-66	C Vincent
	F	INC EO 5P-601	5-1-66	W Herring
	G	INC EO 5P-614	8-1-66	W Herring
	H	INC EO 5P-650	8-1-66	W Herring



NOTES:

1. LAST BALLOON NUMBER USED IS 32.
2. REFERENCE DRAWING WIRING LIST 40M08263.
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
4. FOR ASSEMBLY DWG 40M08209.

MOD KIT NO.	ECP NO.	DATE INC
40M17200	09-484	
40M17200	10-402	
	09-485	
	10-403	

40M08275 H

SEE ENGINEERING RECORDS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS DECIMALS ANGLES
MATERIAL
HEAT TREATMENT
FINAL PROTECTIVE FINISH
NEXT ASSY USED ON APPLICATION

ORIGINAL DATE OF DRAWING APRIL 3, 65
APPROVED DIRECTOR

LOGIC DIAGRAM SYNCHRONIZE & CONTROL COUNT CLOCK TYPE I SATURN V

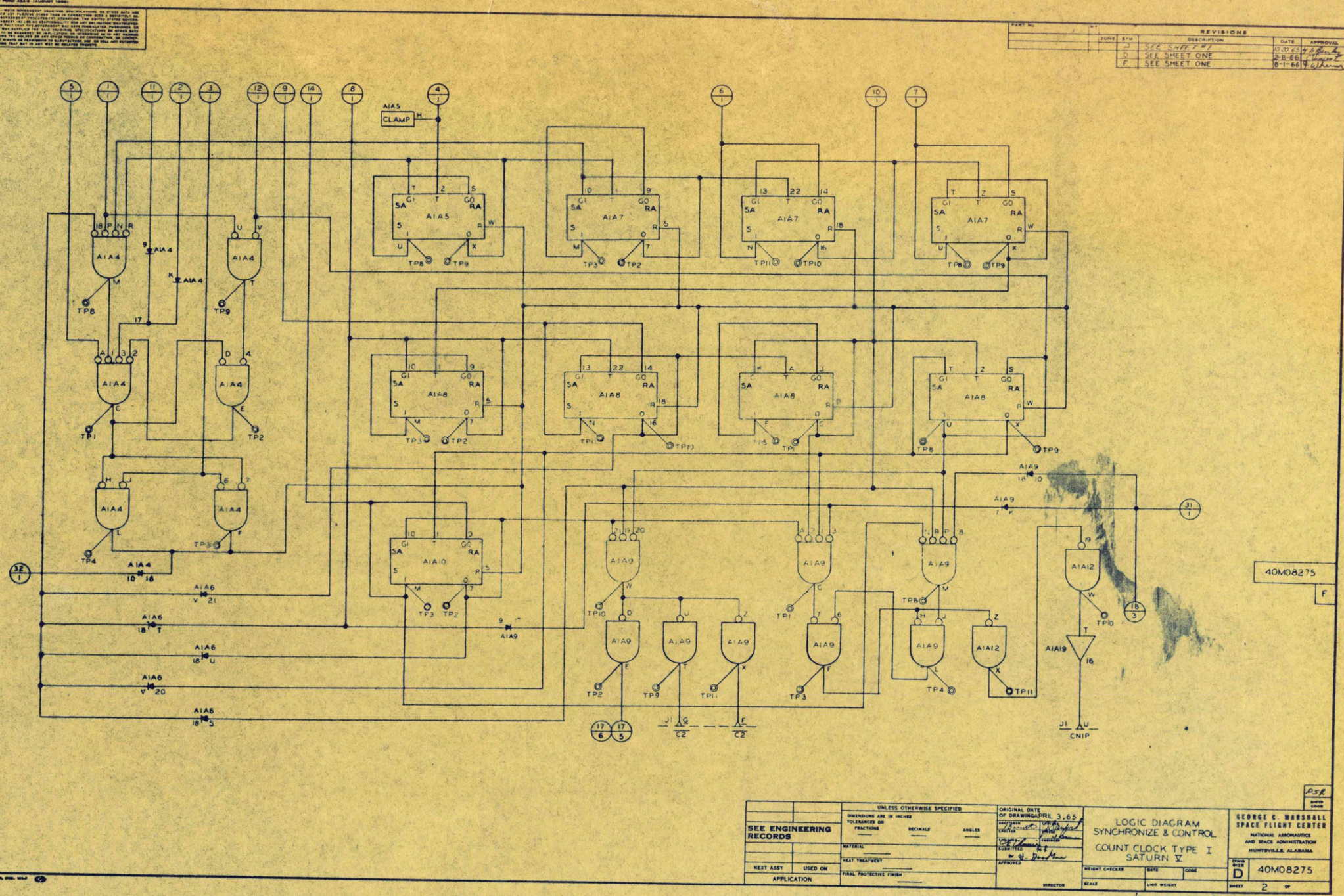
GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

SIZE D 40M08275
SHEET 1 OF 6

P5R

Change Date 6/17/66 5P

21



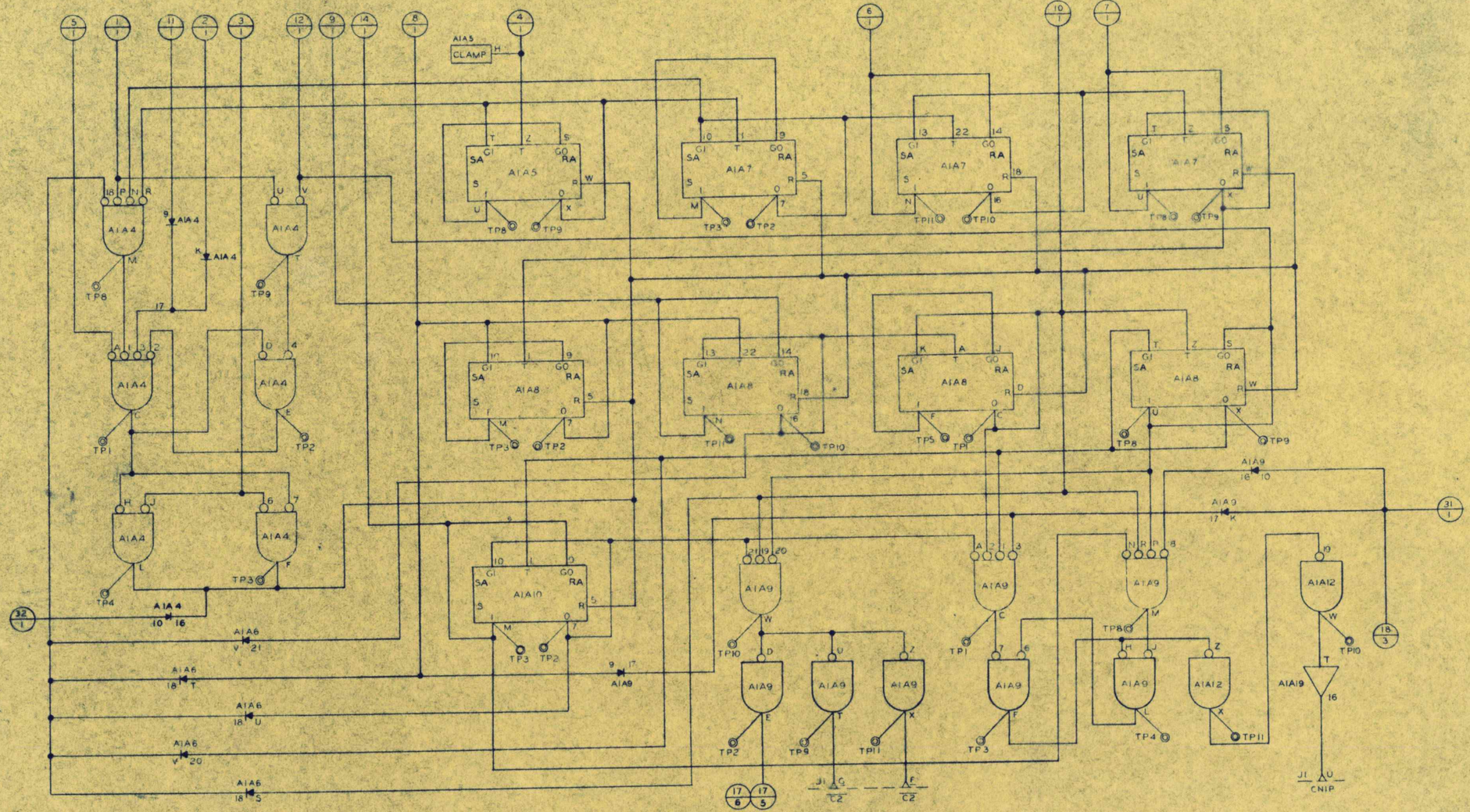
Change Date
30 November, 1966

MSFC FORM 435-5 (AUGUST 1960)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT DOES NOT THEREBY INCUR ANY RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

NEXT ASSY	USED ON

ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	H	SEE SHEET TWO	10-20-65	
	G	SEE SHEET ONE	2-8-66	
	F	SEE SHEET ONE	6-1-66	



40M08275 F

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING: APR 3,65
	MATERIAL	DRAFTSMAN: LARSEN
	HEAT TREATMENT	CHECKER:
NEXT ASSY / USED ON	FINAL PROTECTIVE FINISH	ENGINEER:
APPLICATION		SUBMITTED:
		APPROVED: DIRECTOR

LOGIC DIAGRAM
SYNCHRONIZE & CONTROL
COUNT CLOCK TYPE I
SATURN V

WEIGHT CHECKED | DATE | CODE
SCALE | UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D | 40M08275

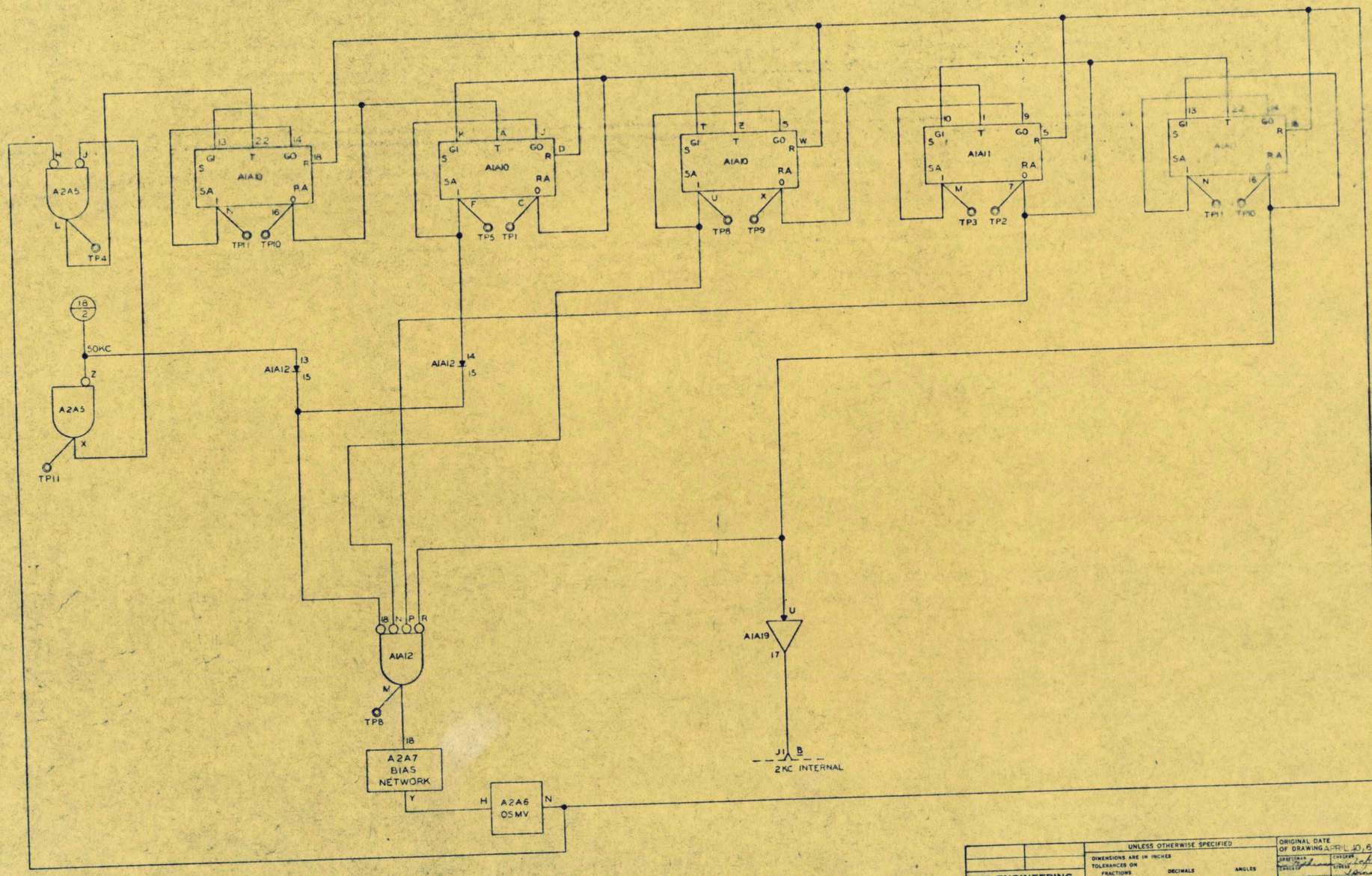
SHEET 2 OF

COPYMATION, INC. 101-2

Change Date
26 June 1967

PART NO.	MFR	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
			A	SEE SHEET #1	12-20-65	
			B	SEE SHEET ONE	10-4-65	
			C	SEE SHEET ONE	10-9-65	
			D	SEE SHEET ONE	2-7-66	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.



40M08275
D

25R

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APRIL 10, 65	LOGIC DIAGRAM SYNCHRONIZE & CONTROL COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON	MATERIAL	DRAFTSMAN / CHECKER	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
APPLICATION	HEAT TREATMENT	STRESS / ENGINEER	DWG SIZE D — 40M08275
	FINAL PROTECTIVE FINISH	SUBMITTED / APPROVED / DIRECTOR	WEIGHT CHECKER / DATE / CODE
			SCALE / UNIT WEIGHT / SHEET 3 OF

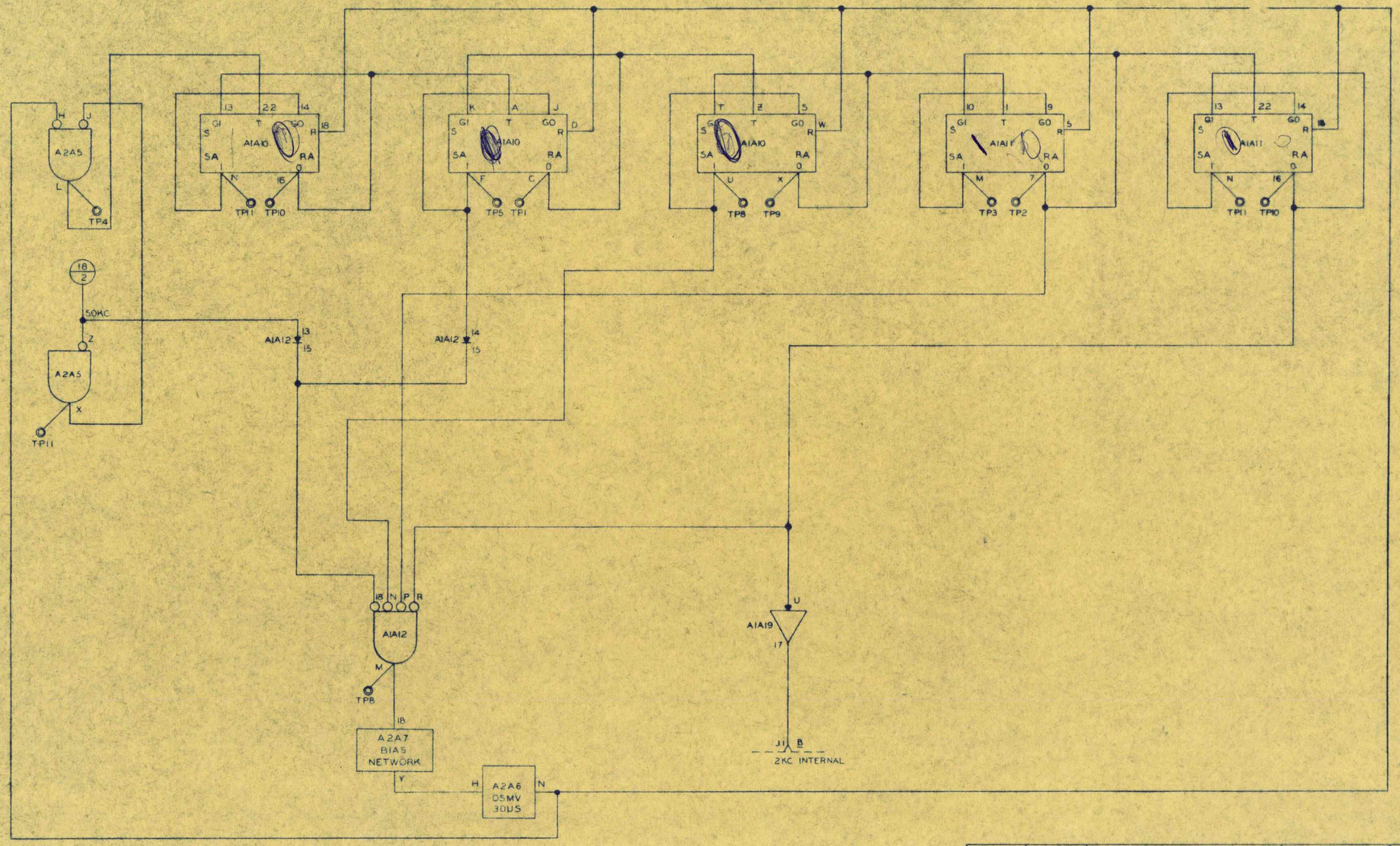
Issued 5/19/65 D

COPYMATION, INC. 161-J

MSFC FORM 456-2 (AUGUST 1966)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	W.T.	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
			A	SEE SHEET #1	4-20-65	W Blanke
			B	SEE SHEET ONE	10-9-65	W Blanke
			C	SEE SHEET ONE	10 9 65	W Blanke
			D	SEE SHEET ONE	2-7-66	R Vincent
			L	SEE SHEET ONE	6-6-67	J Carter



40M08275 L

R3R

UNLESS OTHERWISE SPECIFIED			ORIGINAL DATE OF DRAWING APRIL 10, 65	LOGIC DIAGRAM SYNCHRONIZE & CONTROL COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS	DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS / DECIMALS / ANGLES		SUBMITTED		
	MATERIAL		APPROVED		
	HEAT TREATMENT				
NEXT ASSY / USED ON	FINAL PROTECTIVE FINISH		DIRECTOR	WEIGHT CHECKER / DATE / CODE	SIZE D / 40M08275
APPLICATION				SCALE / UNIT WEIGHT	SHEET 3 OF

COPYMATION, INC. 341-7

Change Date
26 June 1967

MSFC FORM 433-B (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
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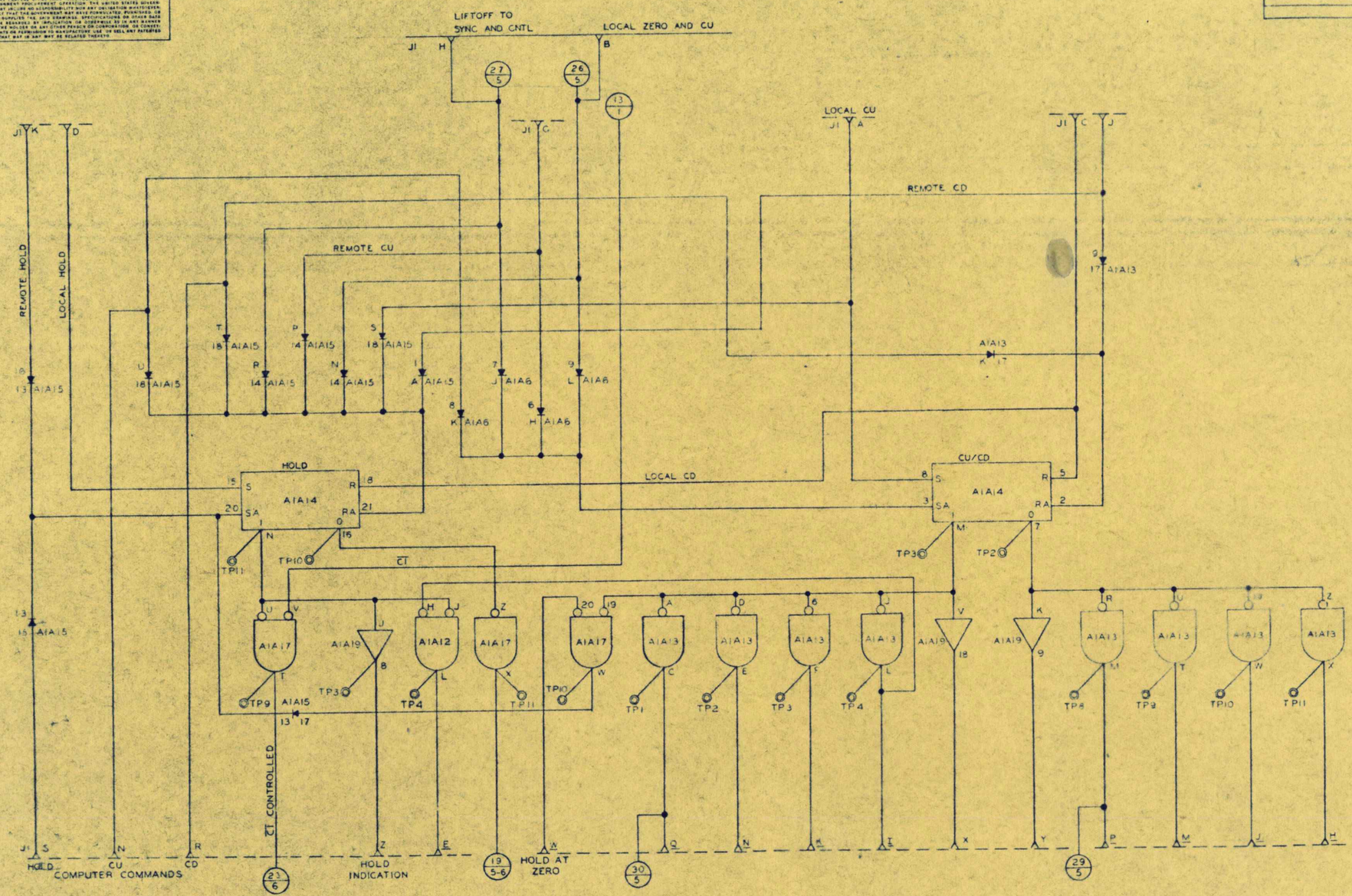
		C	SEE SHEET ONE	10-9-65	
		D	SEE SHEET ONE	2-9-66	



40M08275 D

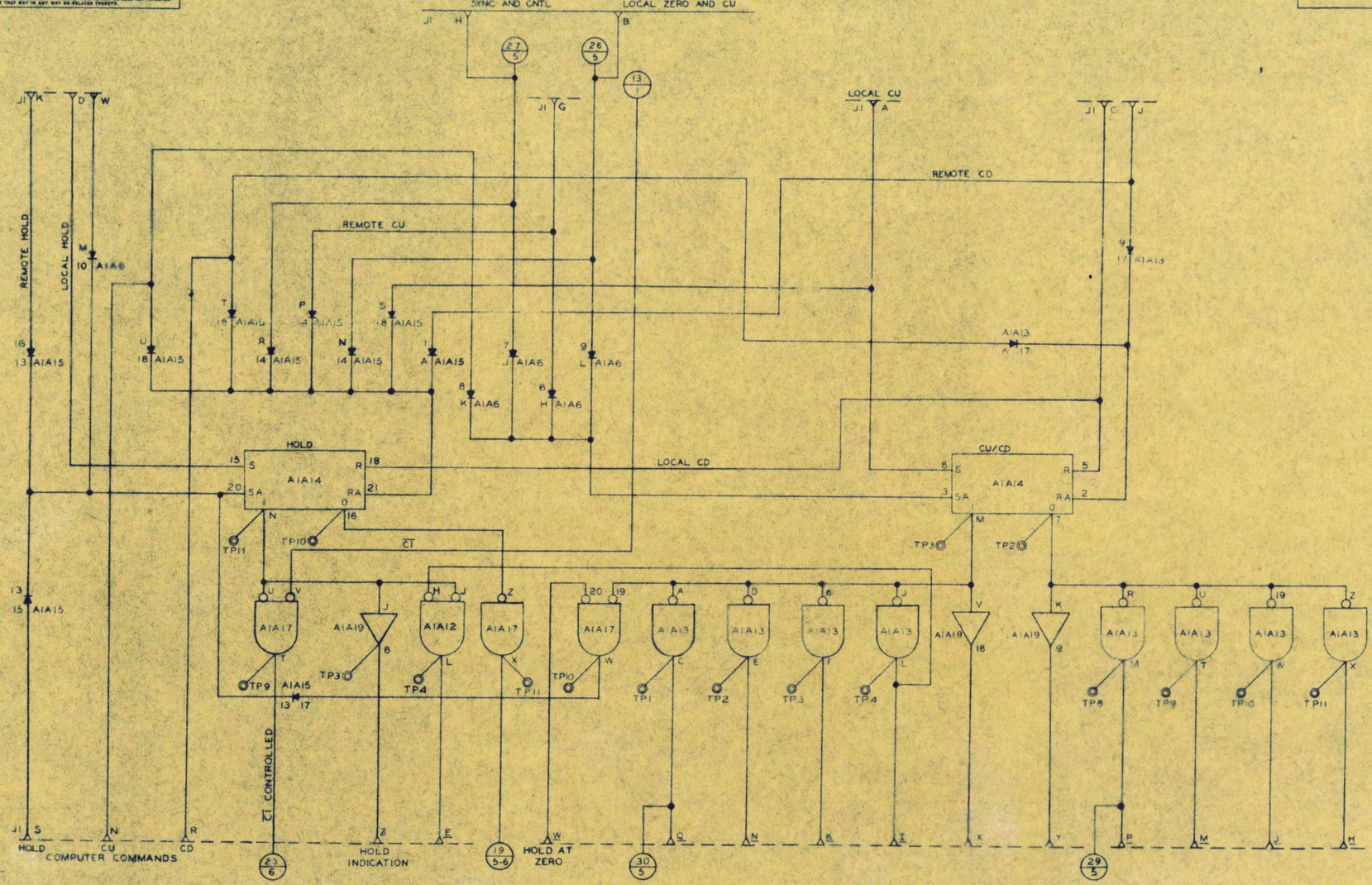
		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APRIL 3, 65	LOGIC DIAGRAM SYNCHRONIZE & CONTROL COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ___ DECIMALS ___ ANGLES ___	DRAFTSMAN		DWG SIZE D — 40M08275
		MATERIAL	CHECKER		
		HEAT TREATMENT	ENGINEER		
NEXT ASSY	USED ON	FINAL PROTECTIVE FINISH	SUBMITTED	WEIGHT CHECKER / DATE / CODE	SHEET 4 OF
APPLICATION			APPROVED DIRECTOR	SCALE / UNIT WEIGHT	

PSR

NASA FORM 426-2 (AUGUST 1960)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	ECP	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	SEE SHEET #1	10-20-64	
		C	SEE SHEET ONE	10-9-65	
		D	SEE SHEET ONE	2-9-66	
		K	SEE SHEET ONE	5-17-67	



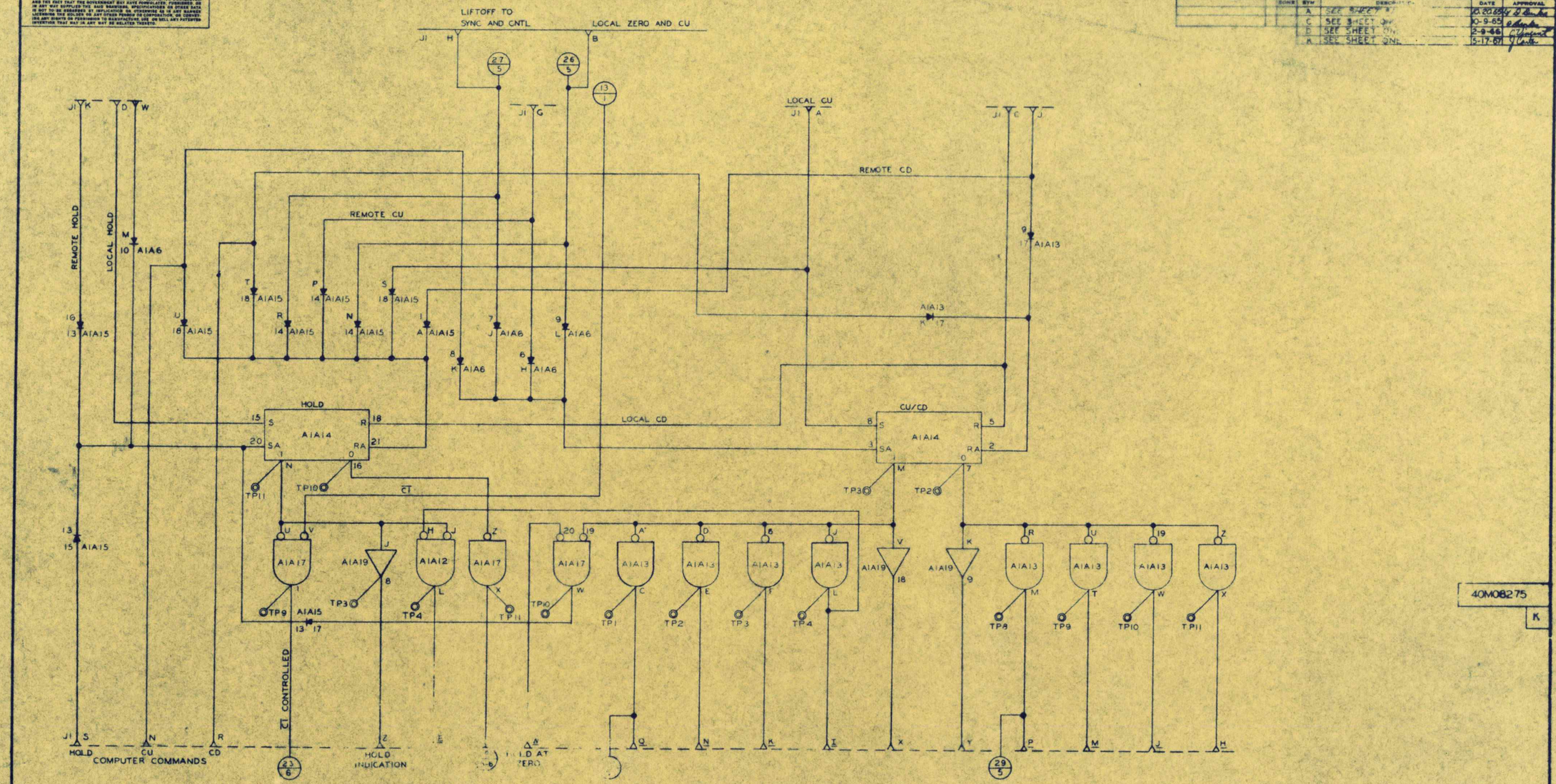
40M08275
K

	UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APRIL 3,'65	LOGIC DIAGRAM SYNCHRONIZE & CONTROL COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS	DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKED ENGINEER SUBMITTED APPROVED DIRECTOR	WEIGHT CHECKED DATE CODE SCALE UNIT WEIGHT	SIZE D 40M08275 SHEET 4 OF
NEXT ASSY USED ON APPLICATION	MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH			

Change Date
26 June 1967

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	REF	REVISIONS			
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL
			A	SEE SHEET 2	10-20-64	
			C	SEE SHEET 2	10-9-65	
			D	SEE SHEET 2	2-9-66	
			A	SEE SHEET 2	5-17-67	



40M08275
K

UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APRIL 3,65	LOGIC DIAGRAM SYNCHRONIZE & CONTROL COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAWN		SIZE D
MATERIAL	CHECKED		40M08275
HEAT TREATMENT	ENGINEER		
FINISH	APPROVED		
NEXT ASSY USED ON	DIRECTOR		
APPLICATION	WEIGHT CHECKED DATE CODE		SHEET 4 OF
SEE ENGINEERING RECORDS	SCALE UNIT WEIGHT		

Change Date
26 June 1967

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	SEE SHEET #1	10-21-65	

PRESET

LOCAL

1 PPS

A1A14 — SA, RA, S, R, E, D, F, C, G1, T, Z, GO, V, W, U, X, PRESET

A1A15 — D, E, V, C

A1A16 — A, C, D, E, F, H, J, L, M, P, R, T, V, W, X, Z

A1A17 — A, C, D, E, F, H, J, L, M, P, R, T, V, W, X, Z

TP1 TP2 TP3 TP4 TP5 TP6 TP7 TP8 TP9 TP10

ONOC TB1-2

J1 E T V L Y X W

17/2	20/6
27/4	21/6
26/4	22/6
28/1	15/1, 16/6
25/1	29/4
24/6	30/4
	19/4

40M08275
A

SEE ENGINEERING RECORDS

NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS — DECIMALS — ANGLES —
MATERIAL
HEAT TREATMENT
FINAL PROTECTIVE FINISH

ORIGINAL DATE OF DRAWING APRIL 3, 65
DRAFTSMAN — CHECKED
CREATED — APPROVED
DESIGNED — ENGINEER
SUBMITTED
APPROVED
DIRECTOR

LOGIC DIAGRAM
SYNCHRONIZE & CONTROL
COUNT CLOCK TYPE II
SATURN V

WEIGHT CHECKER — DATE — CODE
SCALE — UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

PSR
DIGITS CODE

DWG SIZE D — 40V08275

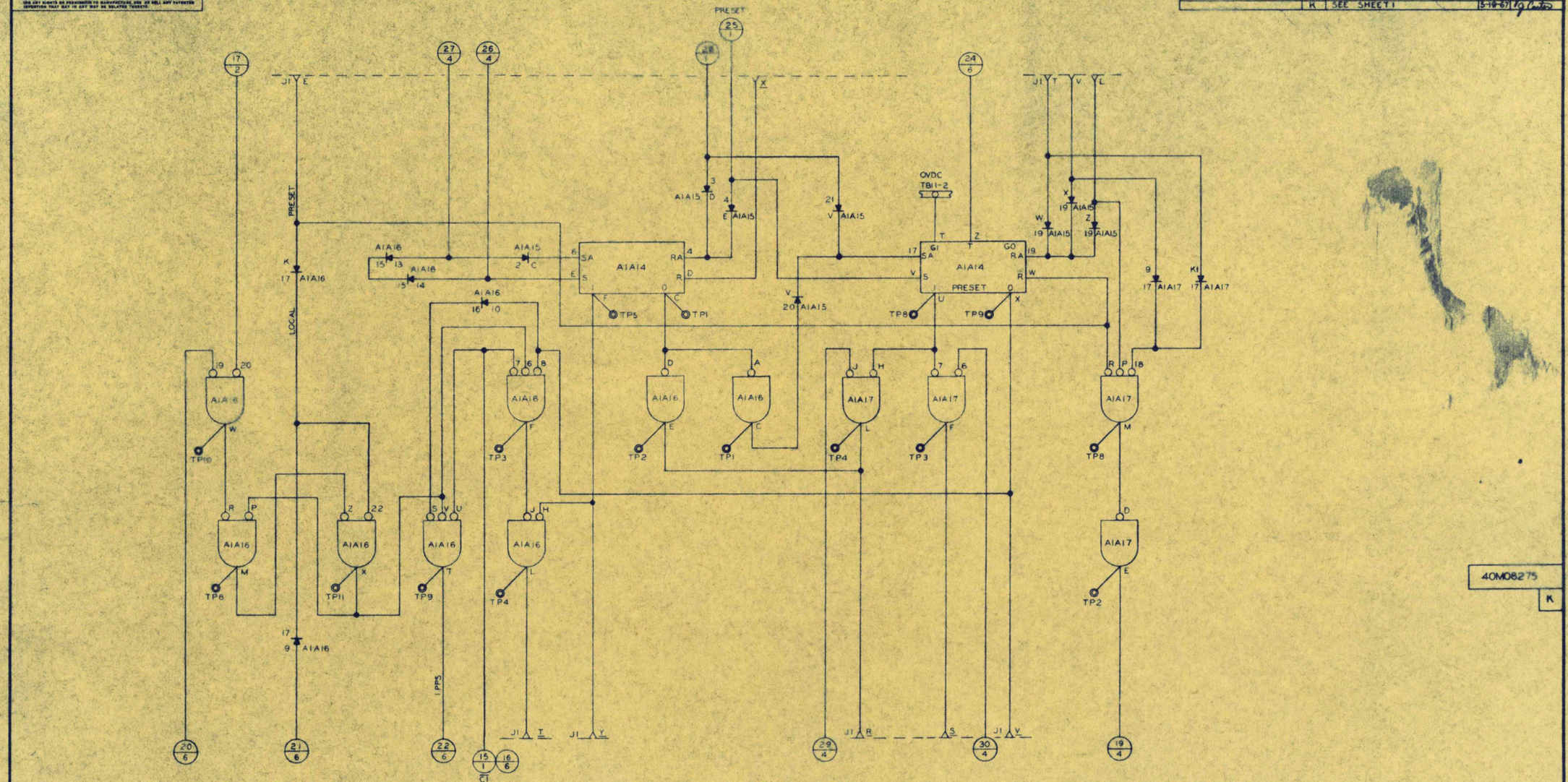
SHEET 5 OF

COPYMATION, INC. 101-7

MSFC FORM 433-F (AUGUST 1966)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS			
STATUS	SYM	DESCRIPTION	DATE	APPROVAL
	J	SEE SHEET 1	4-28-67	
	K	SEE SHEET 1	5-17-67	
			5-19-67	



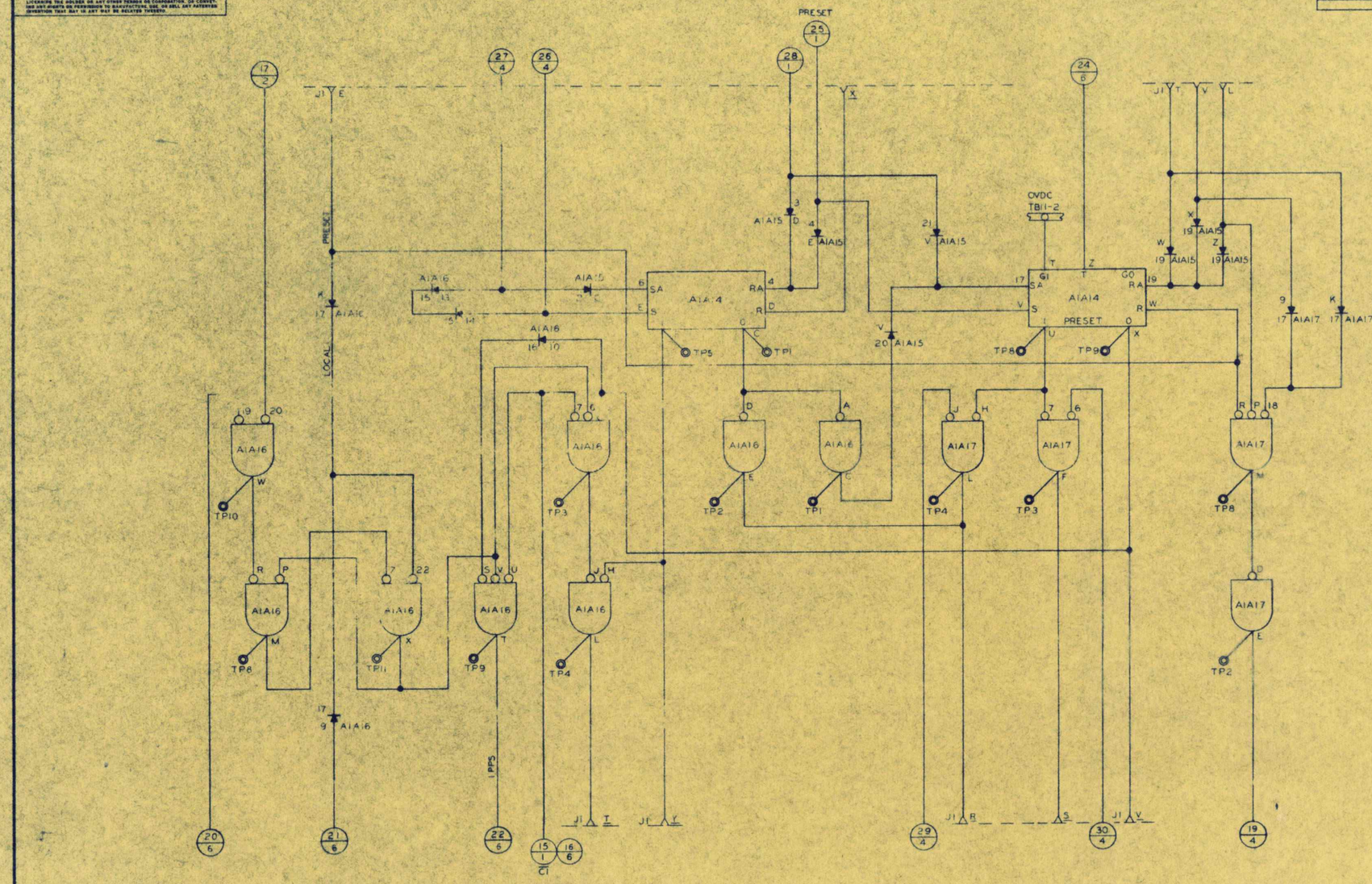
40M08275
K

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APRIL 3,65	LOGIC DIAGRAM SYNCHRONIZE & CONTROL COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ___ DECIMALS ___ ANGLES ___	DRAWN		SIZE D
		MATERIAL	CHECKED		40M08275
NEXT ASSY	USED ON	HEAT TREATMENT	STRESS	WEIGHT CHECKED / DATE / CODE	
APPLICATION		FINAL PROTECTIVE FINISH	SUBMITTED	SCALE / UNIT WEIGHT	SHEET 5 OF
			APPROVED DIRECTOR		

Change Date
26 June 1967

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	ZONE	SYM.	REVISIONS DESCRIPTION	DATE	APPROVAL
		A	SEE SHEET #1	10-21-65	
		J	SEE SHEET 1	5-17-67	
		K	SEE SHEET 1	5-19-67	



40M08275
K

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APRIL 3, 65	LOGIC DIAGRAM SYNCHRONIZE & CONTROL COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY	USED ON	MATERIAL; HEAT TREATMENT; PROTECTIVE FINISH	DRAFTSMAN; DESIGNER; CHECKED; SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE; UNIT WEIGHT	SIZE D; 40M08275; SHEET 5 OF
APPLICATION					

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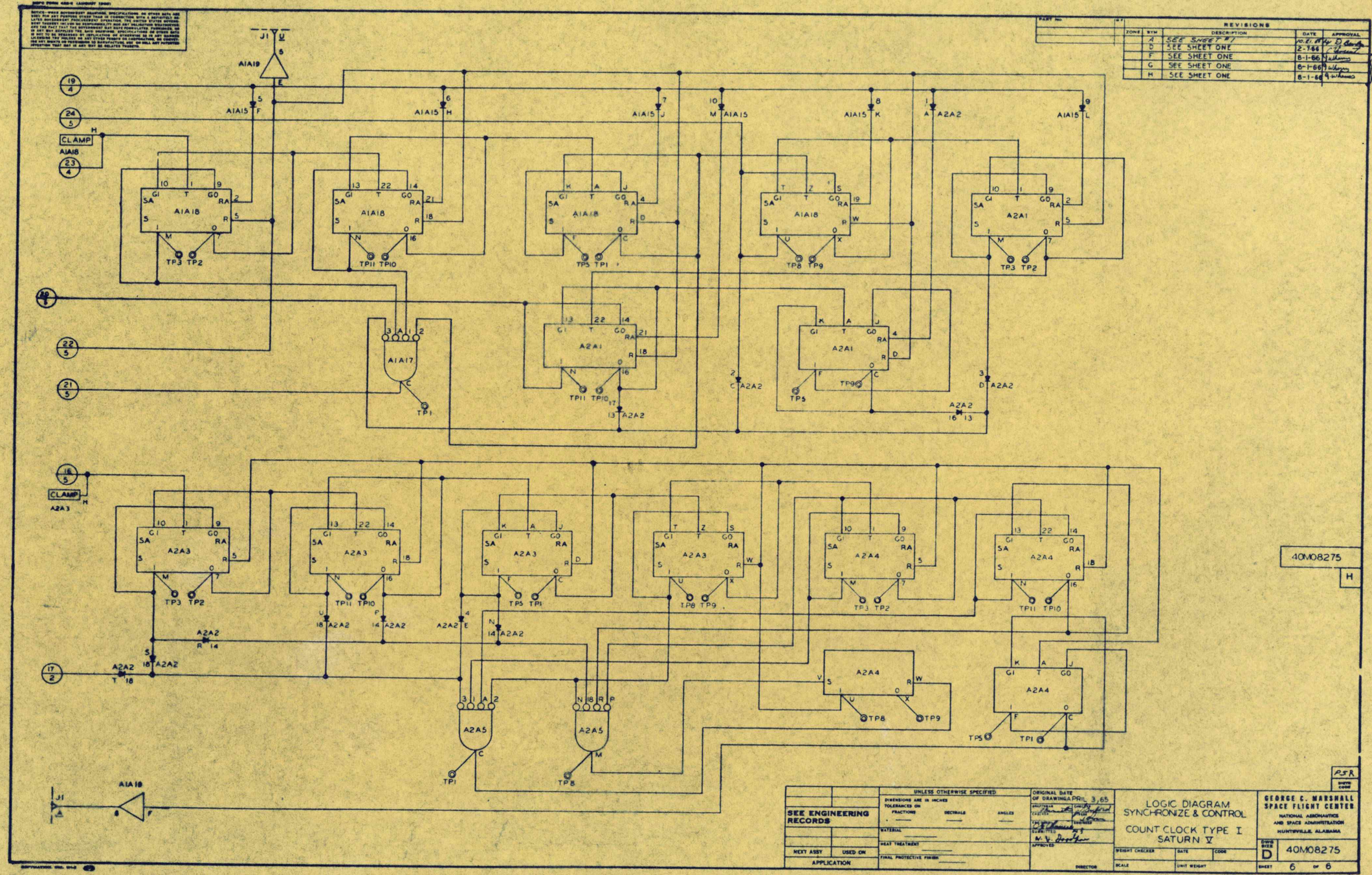
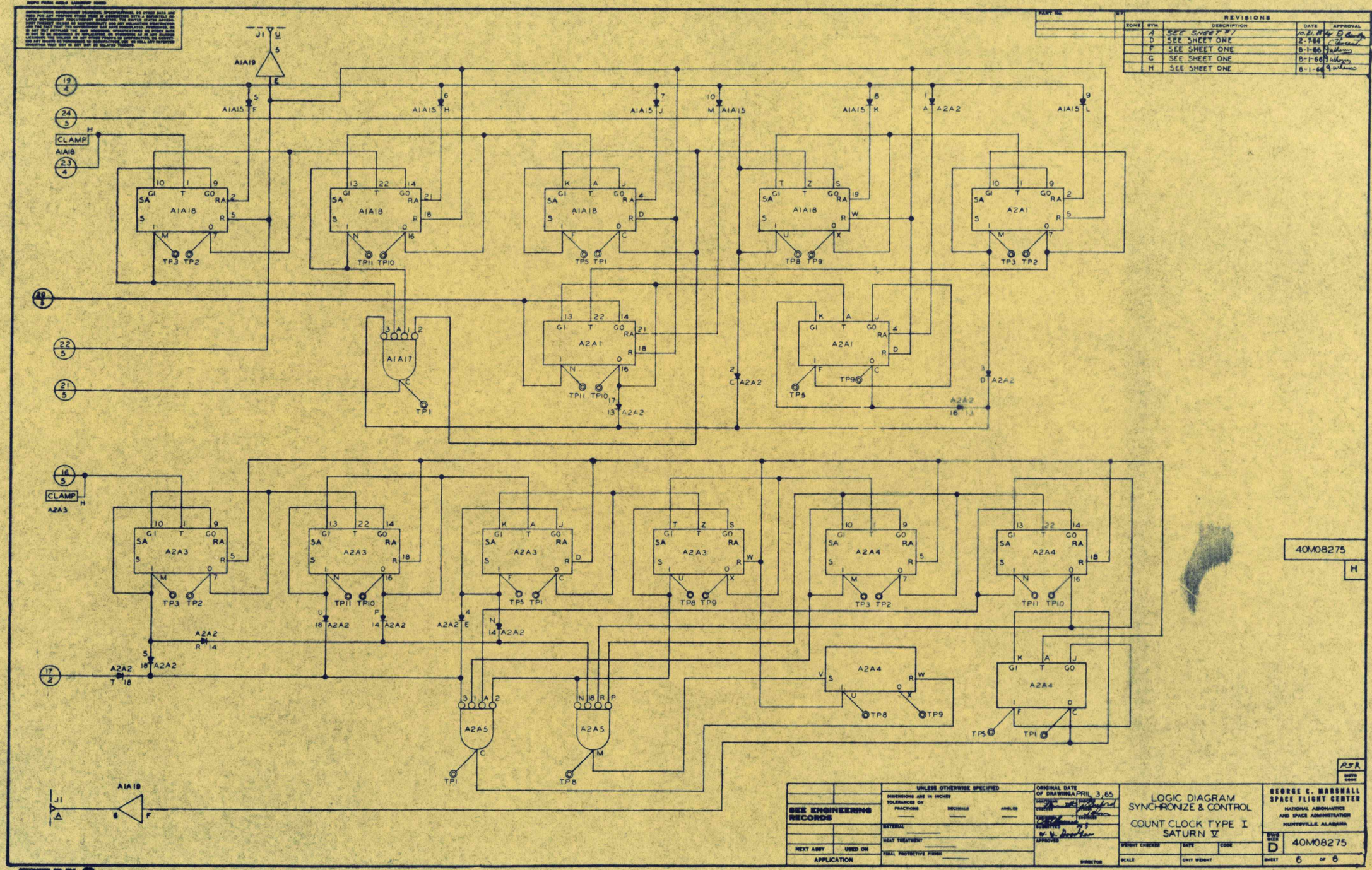
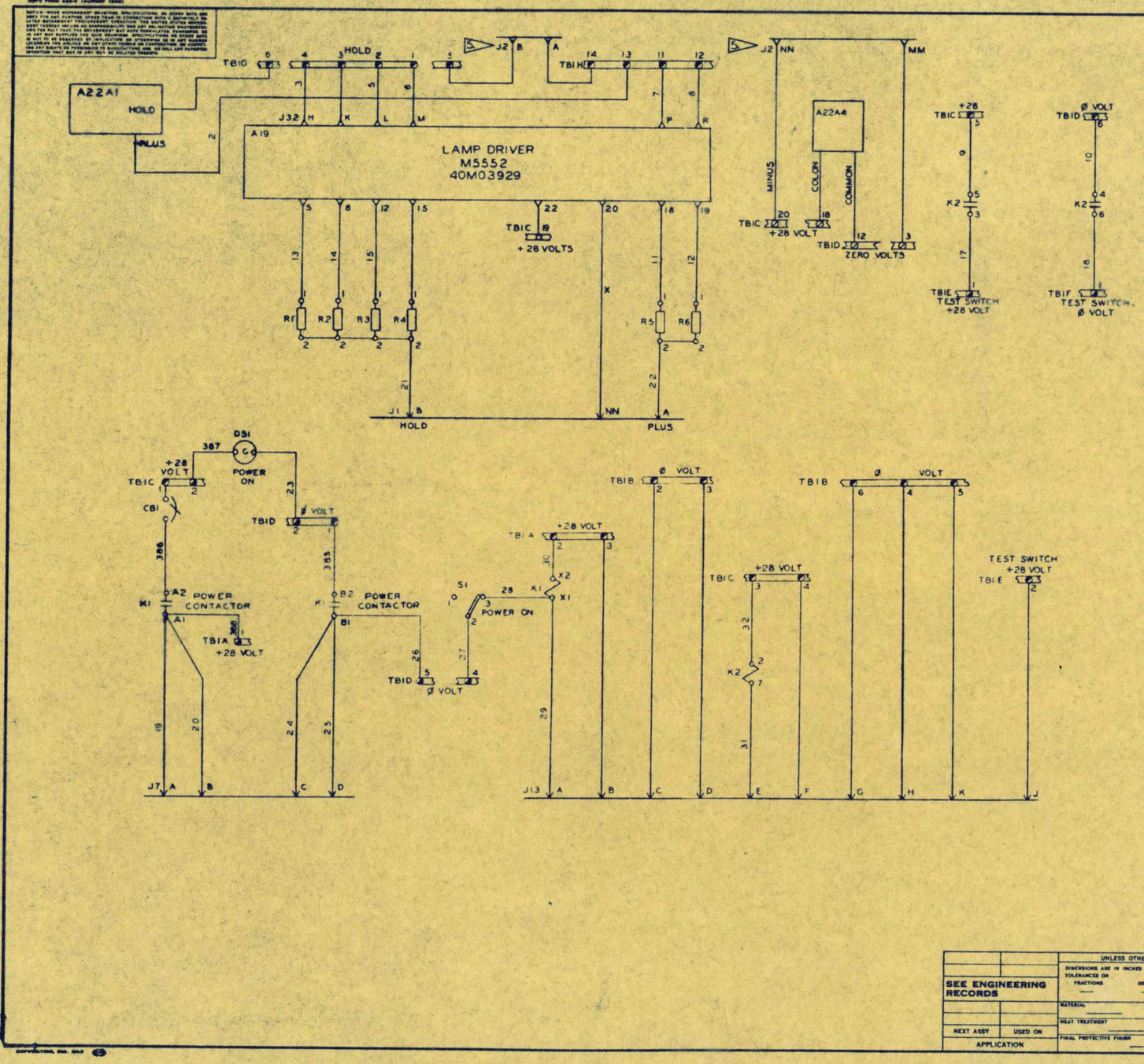
Change Date
26 June 1967



Change Date,
30 November, 1966



Change Date
26 June 1967



NOTES:

1. WIRE IN ACCORDANCE WITH MSFC STANDARD 40M00200.
2. LAST WIRE NUMBER USED 386.
3. ALL WIRE TO BE NO. 20 AWG UNLESS OTHERWISE SPECIFIED. SEE NOTE 7.
4. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN FOR COMPLETE DESIGNATIONS PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATIONS.
5. MATCHING PINS ON CONNECTORS J2 THRU J6 AND J8 THRU J12 WILL BE WIRED (J2-A TO J3-A TO J4-A ETC).
6. ALL RESISTORS ARE RL32AD681J (.312 WATT 680 OHM, 5% TOLERANCE).
7. ALL WIRING TO READOUT MODULES (A22A1-A22A12) TO BE NO. 22 AWG WHITE.

REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVAL
A	INC EO 5P-15	8/3/65	
B	INC EO 5P-24BB	2-9-66	
C	EO 5P-38-A CANCELLED	2-9-66	
D	INC EO 5P-46	2-9-66	
E	INC EO 5P-68T	8-11-66	

40M08280
E

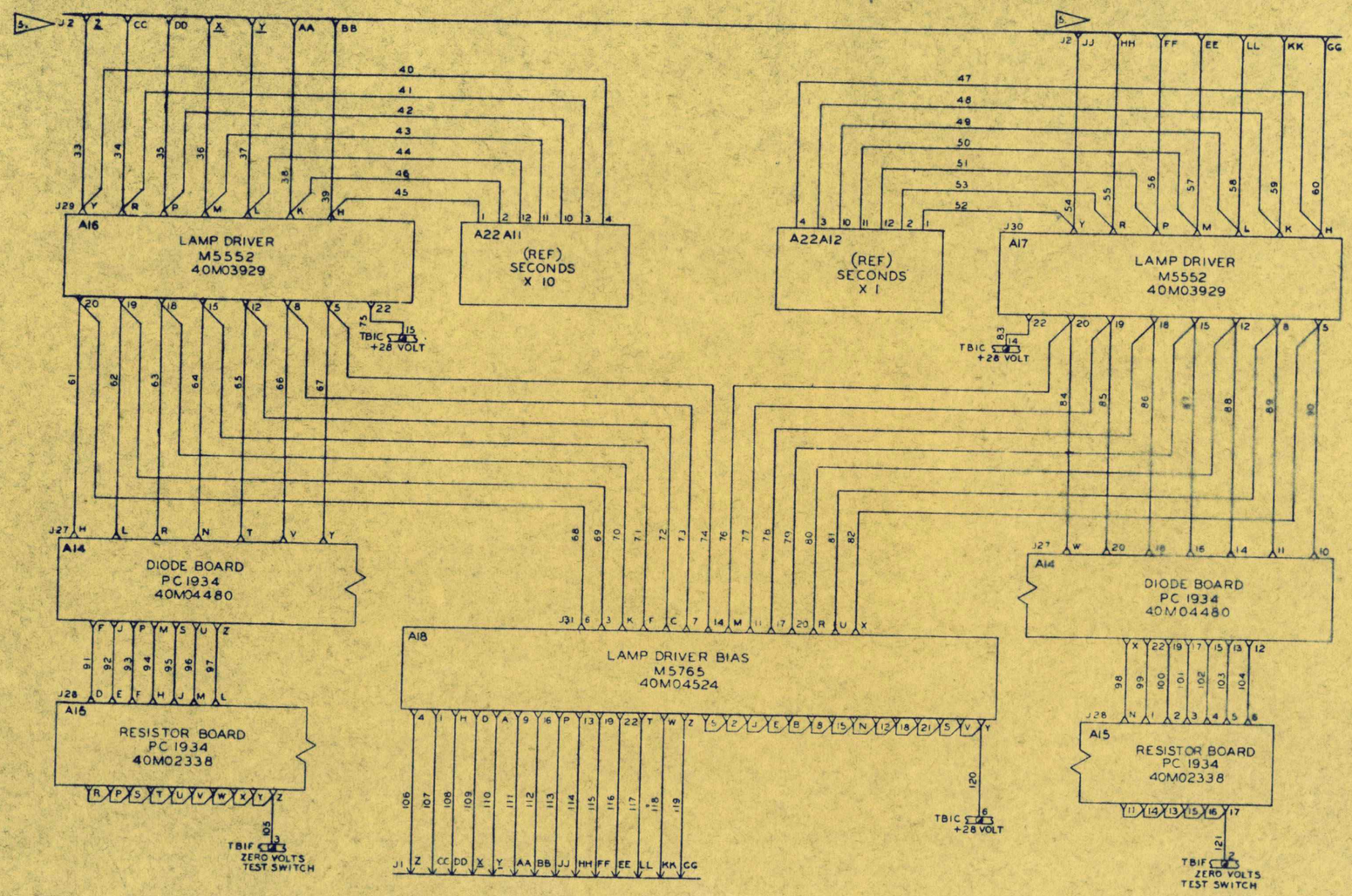
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINISH PROTECTIVE	ORIGINAL DATE OF DRAWING MAY 1, 65	ADVANCED ELECTRICAL UNIT SCHEMATIC READOUT DRIVER COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON / APPLICATION			

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE ALABAMA

DWG SIZE D — 40M08280 — SHEET 1 OF 5

Change Date
30 November, 1966

REVISIONS			
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC EO 5P-15	8-3-66	
	B	INC EO 5P-2488	2-9-66	
	E	INC EO 5P-687	8-11-66	

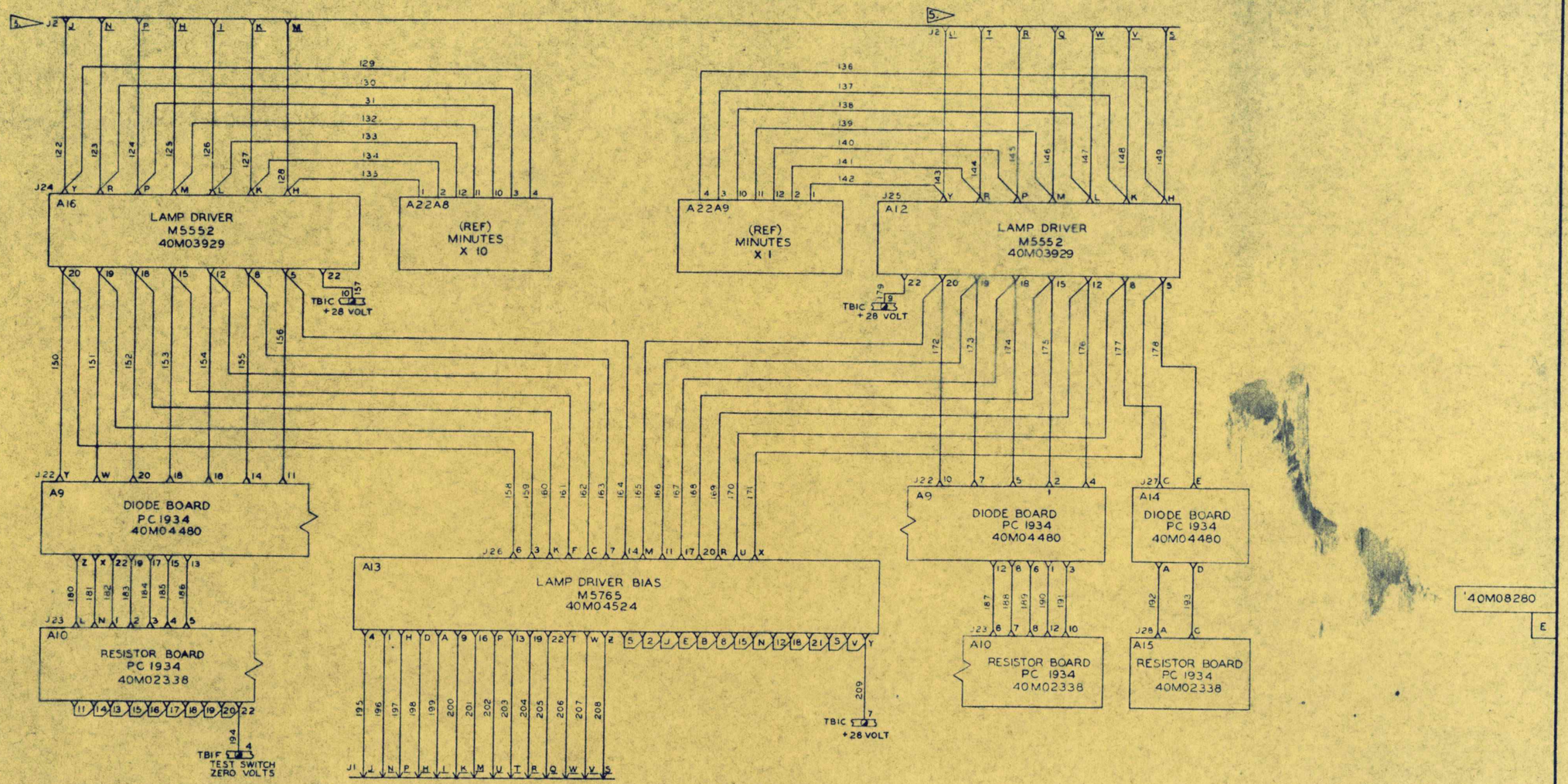


40M08280
E

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAY 1, 65	ADVANCED ELECTRICAL UNIT SCHEMATIC, READOUT DRIVER, COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON / APPLICATION	DRAFTSMAN / CHECKER / APPROVED / DIRECTOR	WEIGHT CHECKER / SCALE / DATE / CODE / UNIT WEIGHT	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA; SIZE D; 40M08280; SHEET 2

Change Date
30 November, 1966

REVISIONS			
ZONE	R/W	DESCRIPTION	DATE	APPROVAL
	A	INC EO SP-15	8/3/65	
	B	INC EO SP-2488	2-9-66	
	C	INC EO SP-887	8-11-66	

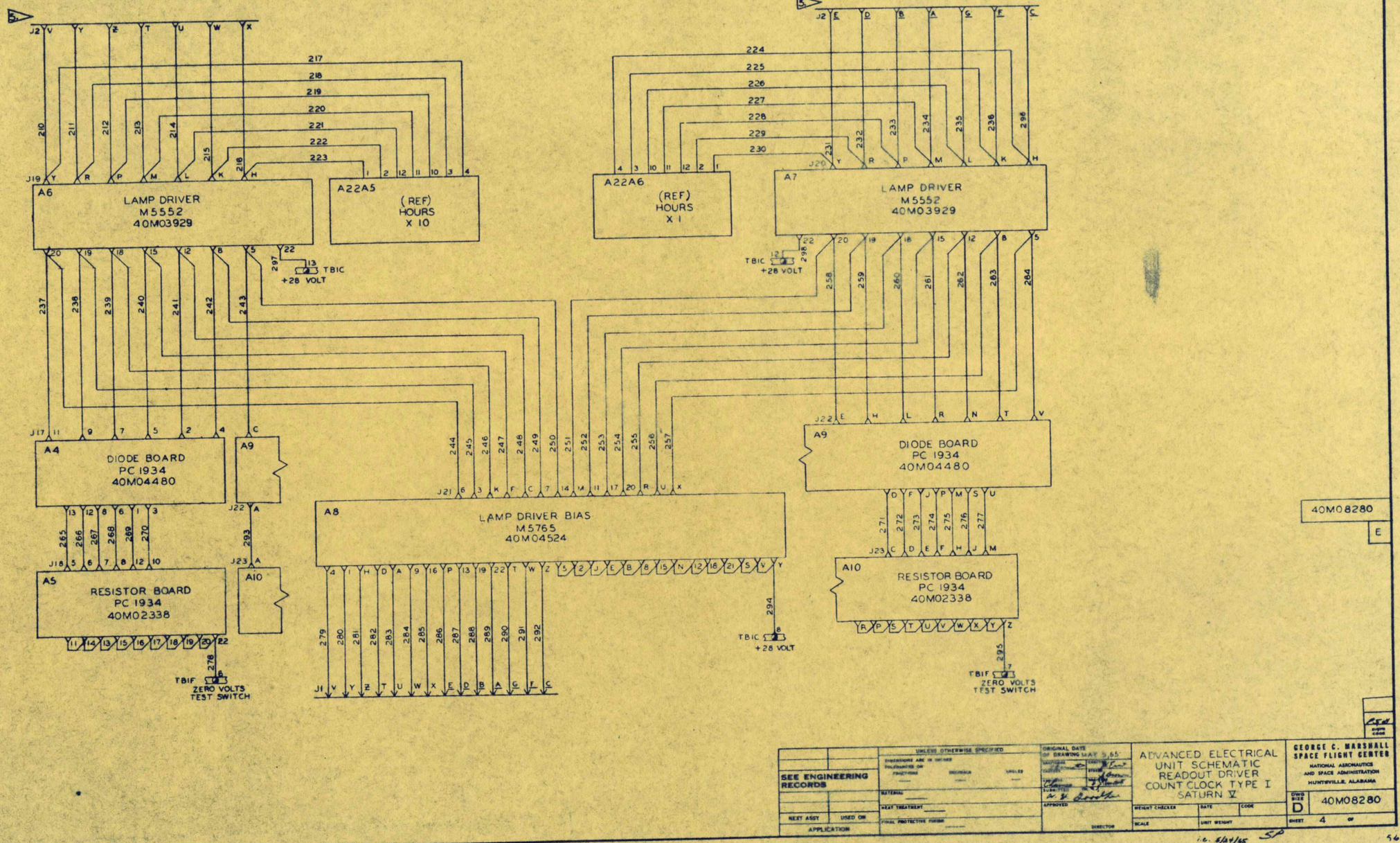


40M08280
E

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAY 3 1965	ADVANCED ELECTRICAL UNIT SCHEMATIC READOUT DRIVER COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON / APPLICATION	APPROVED / DIRECTOR	WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE ALABAMA; DWG SIZE D; 40M08280; SHEET 3 OF

Change Date
30 November, 1966

PART No.	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
		A	INC EO SP-15	6/1/65	
		B	INC EO SP-2488	2966	
		E	INC EO SP-682	8-11-66	



40M08280
E

SEE ENGINEERING RECORDS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS DECIMALS ANGLES
MATERIAL
HEAT TREATMENT
FINISH PROTECTIVE FINISH
NEXT ASSY USED ON APPLICATION

ORIGINAL DATE OF DRAWING MAY 5 65
DRAWN
CHECKED
ENGR APPROVAL
SUBMITTED
APPROVED
DIRECTOR

ADVANCED ELECTRICAL UNIT SCHEMATIC READOUT DRIVER COUNT CLOCK TYPE I SATURN V

WEIGHT CHECKER DATE CODE
SCALE UNIT WEIGHT

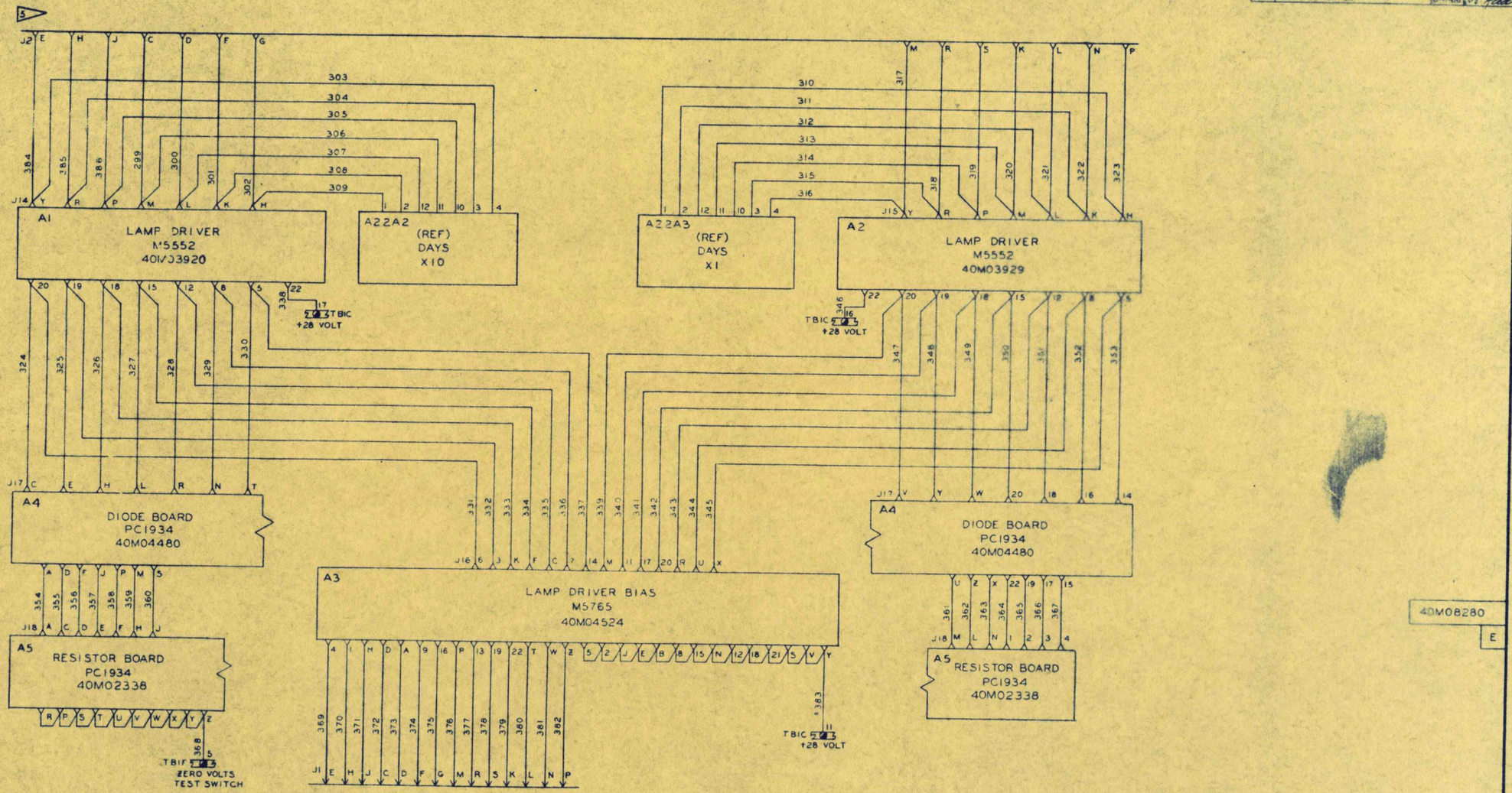
GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

SIZE D 40M08280
SHEET 4 OF

I.C. 4/24/65

Change Date
30 November, 1966

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC EO 5P-15	8/3/65	
	B	INC EO 5P-2488	2-9-66	
	E	INC EO 5P-687	8-11-66	



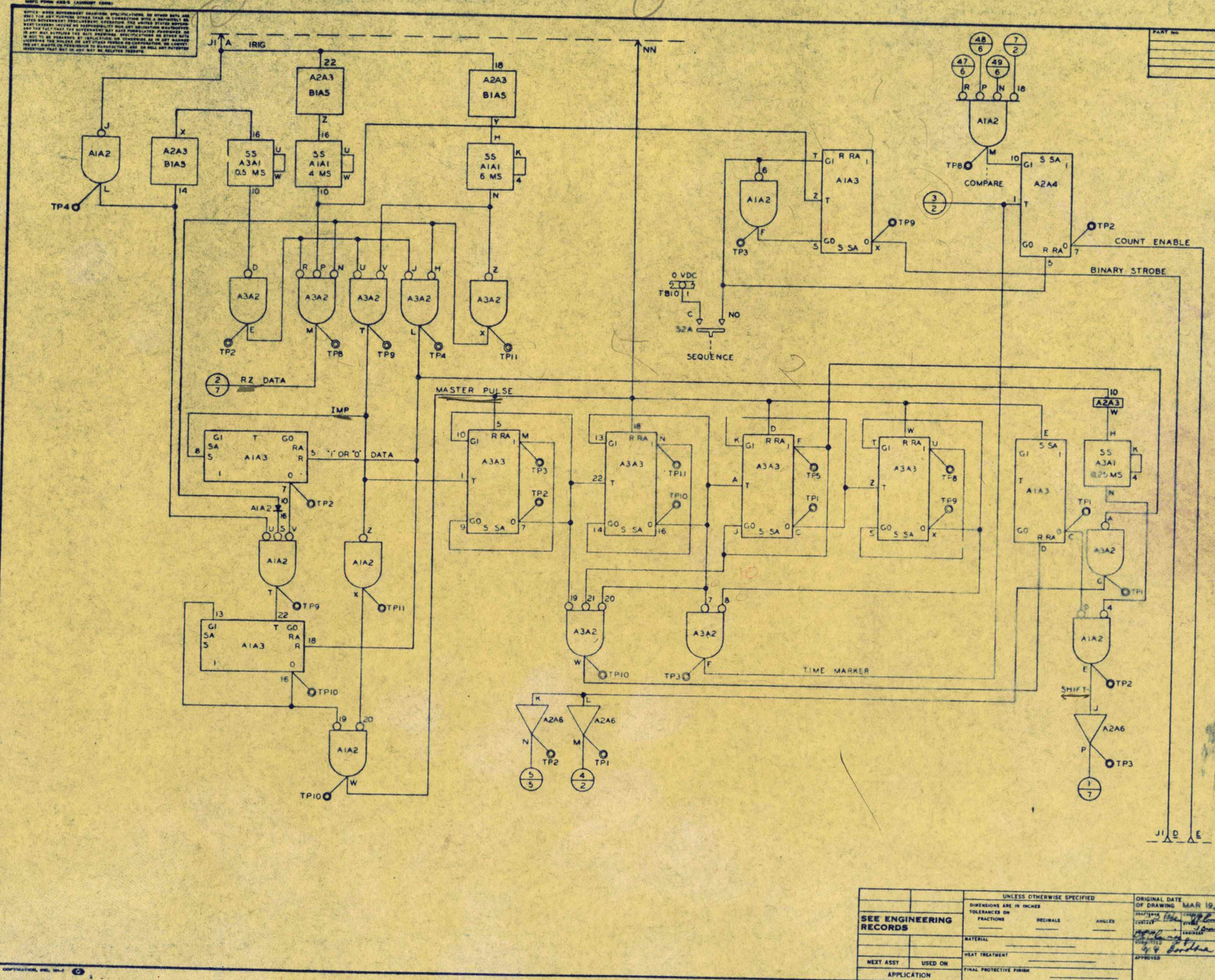
40M08280
E

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAY 1965	ADVANCED ELECTRICAL UNIT SCHEMATIC READOUT DRIVER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
NEXT ASSY / USED ON / APPLICATION		APPROVED / DIRECTOR	WEIGHT CHECKED / DATE / CODE / SCALE / UNIT WEIGHT	SIZE D	40M08280
				SHEET 5 OF 5	

i.c. 8/24/65 SP

Change Date
30 November, 1966

PART NO.			REVISIONS		
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-208	9-30-65	
		B	INC EO 5P-397	12-9-65	
		C	INC EO 5P-606	8-1-66	



NOTES:

1. LAST BALLOON NO. USED, 70.
2. REFERENCE DRAWINGS: WIRING LIST A40M08237, ASSEMBLY 40M08219.
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NO. & ASSEMBLY DESIGNATION.

40M08284 C

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAR 19,65	LOGIC DIAGRAM REAL TIME SYNC COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON / APPLICATION	DRAFTSMAN; CHECKED; ENGINEER; APPROVED; DIRECTOR	WEIGHT CHECKER; SCALE; DATE; CODE; UNIT WEIGHT	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA; DWG SIZE D; 40M08284; SHEET 1 OF 9

Change Date
30 November, 1966

NSFC FORM 432-S (AUGUST 1960)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT DOES NOT THEREBY INCUR ANY RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	W.F.	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
			A	INC. EO SP-203	9-3-65	
			B	SEE SHEET ONE	12-9-65	

SECONDS X1
1 2 4 8

A1A5 DIODES: 15 (13), 15 (14), 17 (9), 17 (K), 10 (16)

A2A4 (TP11, TP10, TP5, TP1, TP8, TP9)

A1A6 (TP3, TP2)

A1A8 (TP11, TP10)

A1A5 DIODES: (12, 22), (19, 20), (U, V), (R, P), (J, H), (16, 7), (D, A), (A, I)

TP11, TP10, TP9, TP8, TP4, TP3, TP2, TP1

A1A4 (TP3, TP2)

A1A4 (TP11, TP10)

A1A4 (TP5, TP1)

A1A4 (TP8, TP9)

A2A5 (TP10, TP9, TP8)

A2A6 (TP4, TP5)

A2A6 (TP6, TP7)

A2A6 (TP8, TP9)

A2A6 (TP10, TP11)

A3A5 DECODER
M-6062
40M07666

A3A4 DIODES: (X, Y), (V, W), (L, U), (K, P), (2, L), (3, F), (Z, D)

J2 (A, B, C, D, E, F, G)

7 6 5 4 3 2 1

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING: MAR 19,65	LOGIC DIAGRAM REAL TIME SYNC COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON: APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED; DIRECTOR	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
			DWG SIZE D — 40M08284 — SHEET 2 OF

40M08284 B

COPYMATION, INC. 101-7

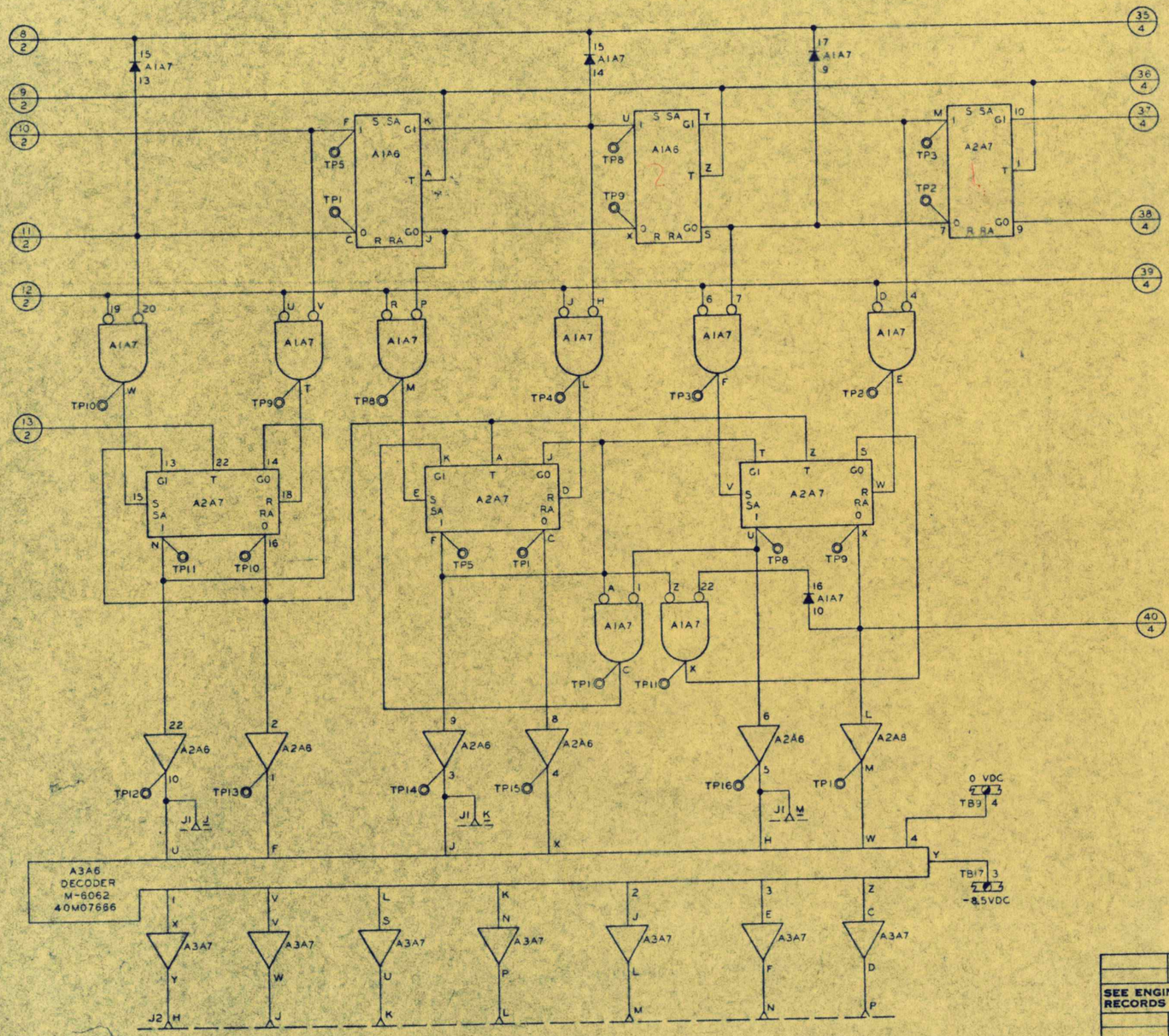
NASA FORM 423-5 (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	W.F. ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
		A	INC EO AP-204	9-30-65	J. Shuler
		B	SEE SHEET ONE	12-9-65	J. Shuler

SECONDS X10

1 2 4



SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING MAR 19,65	LOGIC DIAGRAM REAL TIME SYNC COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED; DIRECTOR	WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40M08284 — SHEET 3 OF

40M08284 B

Issued 5/18/65 SP

COPYMATION, INC. 101-7

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

MSFC FORM 433-5 (AUGUST 1960)

MINUTES XI
1 2 4 8

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC EO 5P-20A	9-30-65	
	B	SEE SHEET ONE	12-9-65	

40M08284
B

SEE ENGINEERING RECORDS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS ____ DECIMALS ____ ANGLES ____
MATERIAL
HEAT TREATMENT
FINAL PROTECTIVE FINISH
NEXT ASSY | USED ON
APPLICATION

ORIGINAL DATE OF DRAWING MAR 19,65
DRAFTSMAN | CHECKER
CHECKER | ENGINEER
SUBMITTED
APPROVED
DIRECTOR

LOGIC DIAGRAM
REAL TIME SYNC
COUNT CLOCK TYPE I
SATURN V

WEIGHT CHECKER | DATE | CODE
SCALE ____ | UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE ALABAMA

DWG SIZE D | 40M08284
SHEET 4 OF

Deemed 5/18/65 SP

COPYMATION, INC. 101-7

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	W.F.	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
			A	INC EO SP-209	9-30-65	
			B	SEE SHEET ONE	12-9-65	

MINUTES x10
1 2 4

A1A11 · A1A12 · A1A10 · A2A11 · A2A8 · A3A14

TP10 TP9 TP4 TP3 TP2 TP1 TP11 TP8 TP5 TP12 TP13 TP14 TP15 TP7 TP6

A3A13 DECODER M-6062 40M07666

0 VDC TB3 4

-8.5 VDC TB1 3

	UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAR 19,65	LOGIC DIAGRAM REAL TIME SYNC COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS	DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	DRAFTSMAN / CHECKER / ENGINEER / SUBMITTED / APPROVED / DIRECTOR	WEIGHT CHECKER / DATE / CODE	DWG SIZE D — 40M08284
NEXT ASSY / USED ON	MATERIAL / HEAT TREATMENT / FINAL PROTECTIVE FINISH		SCALE / UNIT WEIGHT	SHEET 5 OF
APPLICATION				DIGITS CODE 25L

40M08284 B

Issued 5/10/65 SP

COPYMATION, INC. 351-F

NOTICE- WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
		A	INC EO SP-208	9-30-65	
		B	SEE SHEET ONE	12-9-65	

HOURS X1

A3A16
DECODER
M-6062
40M07666

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS ____ DECIMALS ____ ANGLES ____	ORIGINAL DATE OF DRAWING MAR 19 65	LOGIC DIAGRAM REAL TIME SYNC COUNT CLOCK TYPE I SATURN V
NEXT ASSY ____ USED ON ____ APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	DRAFTSMAN; CHECKED; ENGINEER; SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE; UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40M08284 — SHEET 6 OF

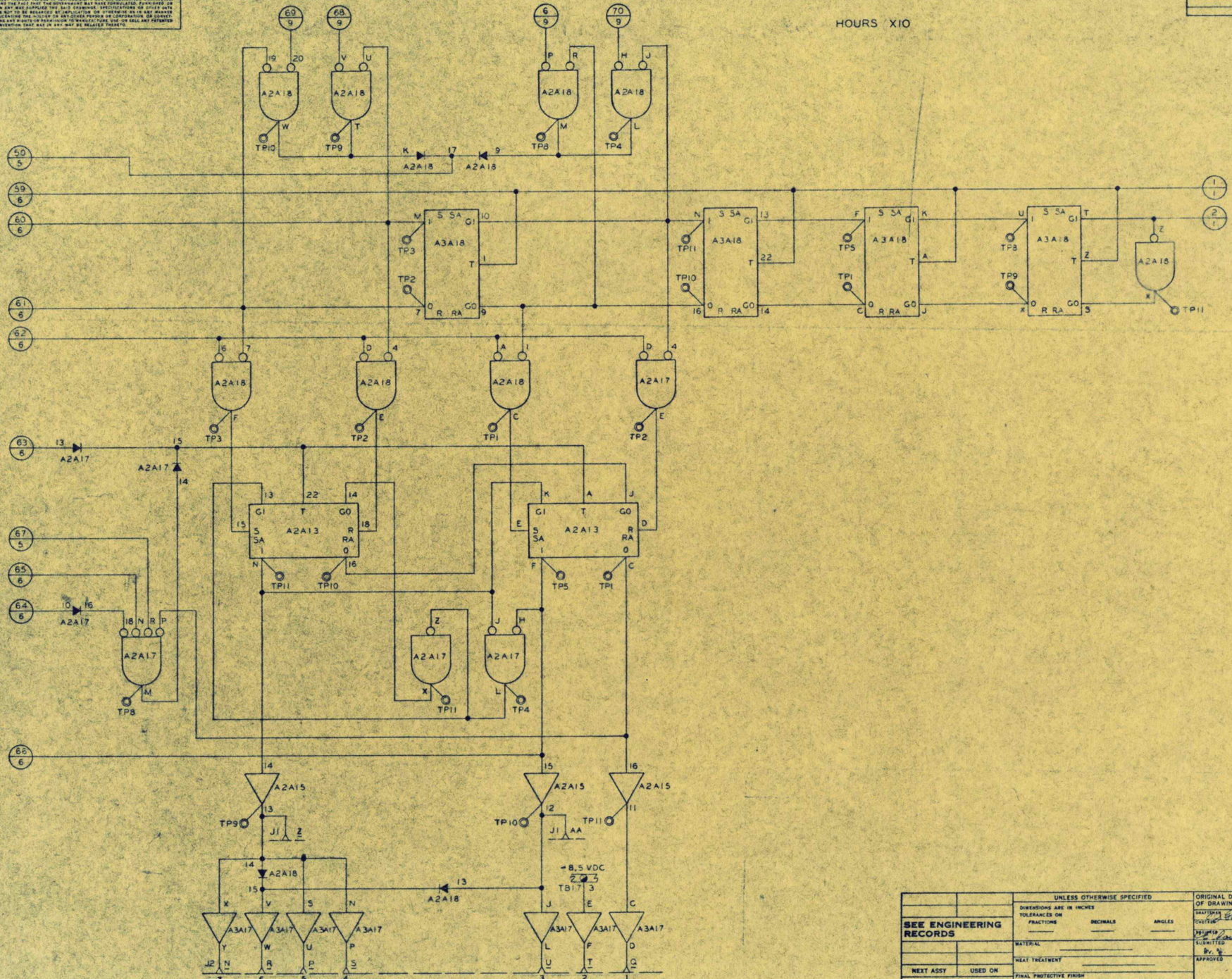
40M08284 B

Issued 5/16/65 SP

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS					
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC LTR SP-203	8-10-65	
	B	SEE SHEET ONE	12-9-65	

HOURS X10



40M08284
B

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING MAR 19,65	LOGIC DIAGRAM REAL TIME SYNC COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	DRAFTSMAN; CHECKER; STRESS; PROJECT ENGINEER; SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40M08284

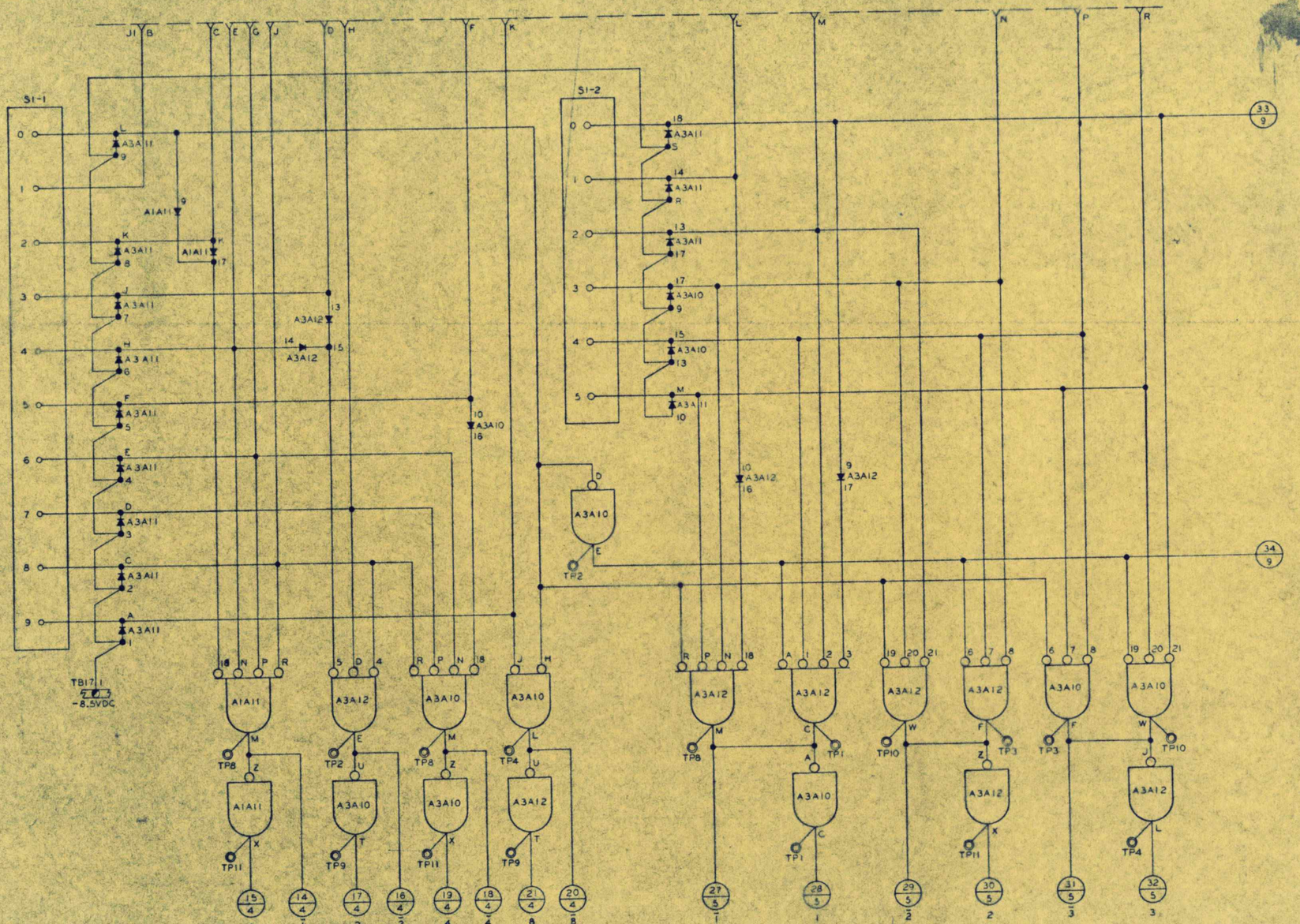
SHEET 7 OF

COPYMATION, INC. 101-7

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

MSFC FORM 482 B (AUGUST 1960)

PART NO.	#	REVISIONS ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M08284

UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAR 19,65
DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	DRAWN / CHECKED / ENGINEER / APPROVED / DIRECTOR
MATERIAL	
HEAT TREATMENT	
FINAL PROTECTIVE FINISH	
NEXT ASSY / USED ON / APPLICATION	
SEE ENGINEERING RECORDS	

LOGIC DIAGRAM
REAL TIME SYNC
COUNT CLOCK TYPE I
SATURN V

WEIGHT CHECKER / DATE / CODE
SCALE / UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

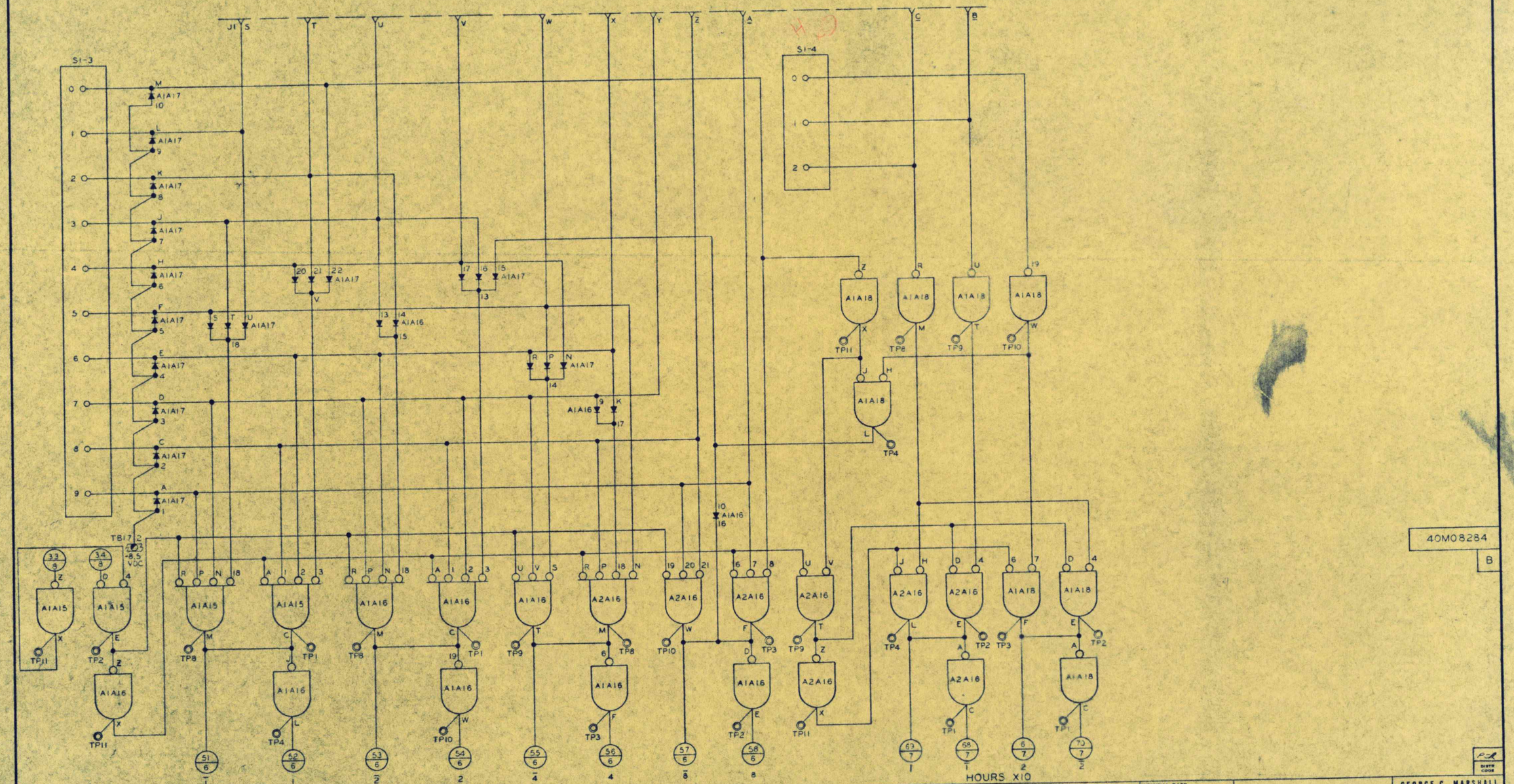
DWG SIZE D — 40M08284 — SHEET 8 OF

COPYMATION, INC. 121-7

PART No.	W.P.	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
			A	INC. EO SP 209	9-30-65	
			B	SEE SHEET ONE	12-9-65	

MSFC FORM 483-B (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT HEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.



SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING MAR 19,65	LOGIC DIAGRAM REAL TIME SYNC COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON	MATERIAL	DRAFTSMAN / CHECKER / SUBMITTED / APPROVED / DIRECTOR	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
APPLICATION	HEAT TREATMENT	WEIGHT CHECKER / DATE / CODE	DWG SIZE D — 40M08284
	FINAL PROTECTIVE FINISH	SCALE / UNIT WEIGHT	SHEET 9 OF 9

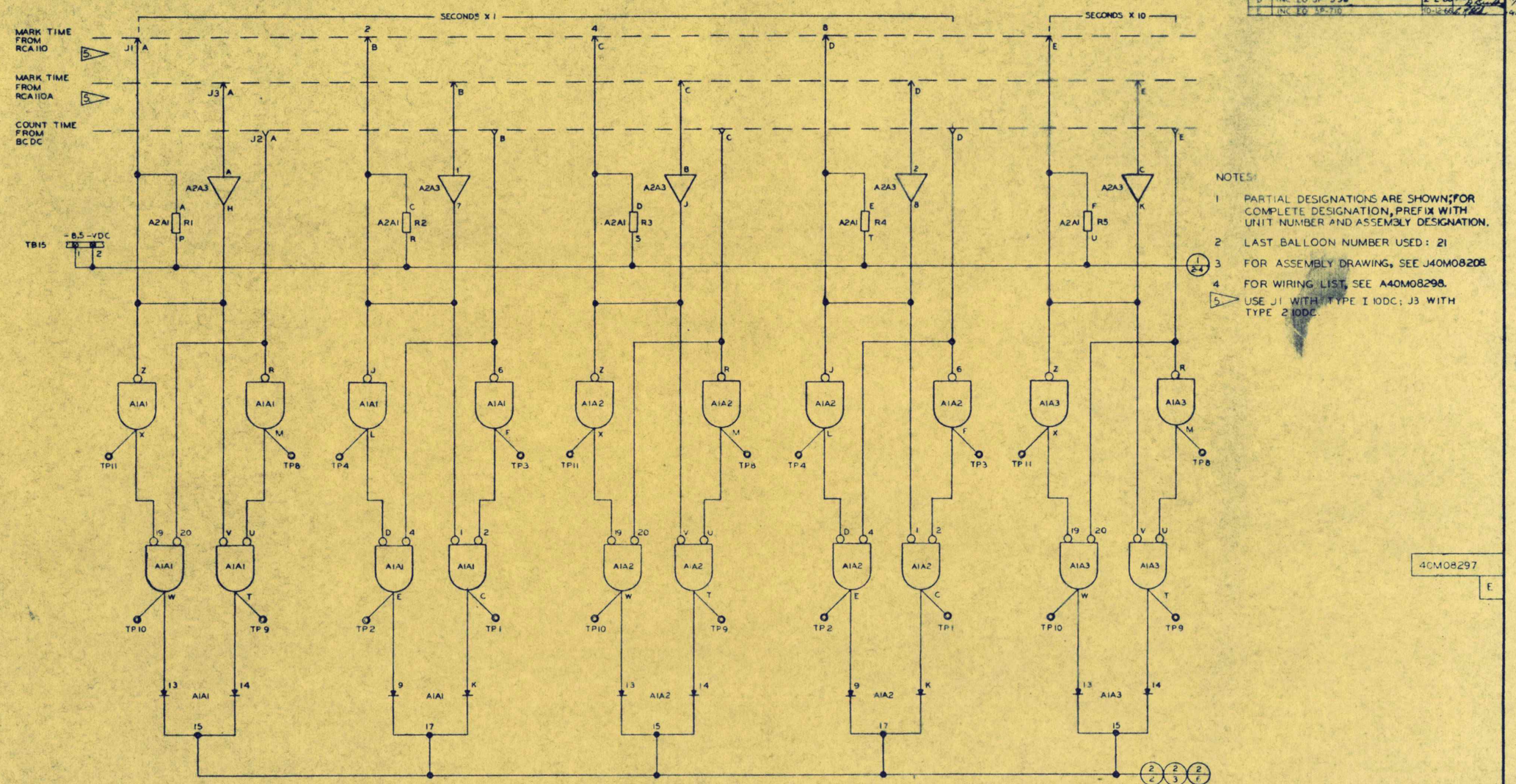
40M08284 B

COPYMATION, INC. 971-7

MSFC FORM 489-D (AUGUST 1966)

NOTICE-WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO			REVISIONS		
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL
			A	INC EO 5P-79	6-30-65	
			B	REVISED PER EO 5P-234A	9-15-65	
			C	INC EO 5P-416	12-10-65	
			D	INC EO 5P-558	2-2-66	
			E	INC EO 5P-710	10-12-66	



NOTES:

1. PARTIAL DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
2. LAST BALLOON NUMBER USED: 21
3. FOR ASSEMBLY DRAWING, SEE J40M08208.
4. FOR WIRING LIST, SEE A40M08298.
5. USE J1 WITH TYPE I 10DC; J3 WITH TYPE 2 10DC.

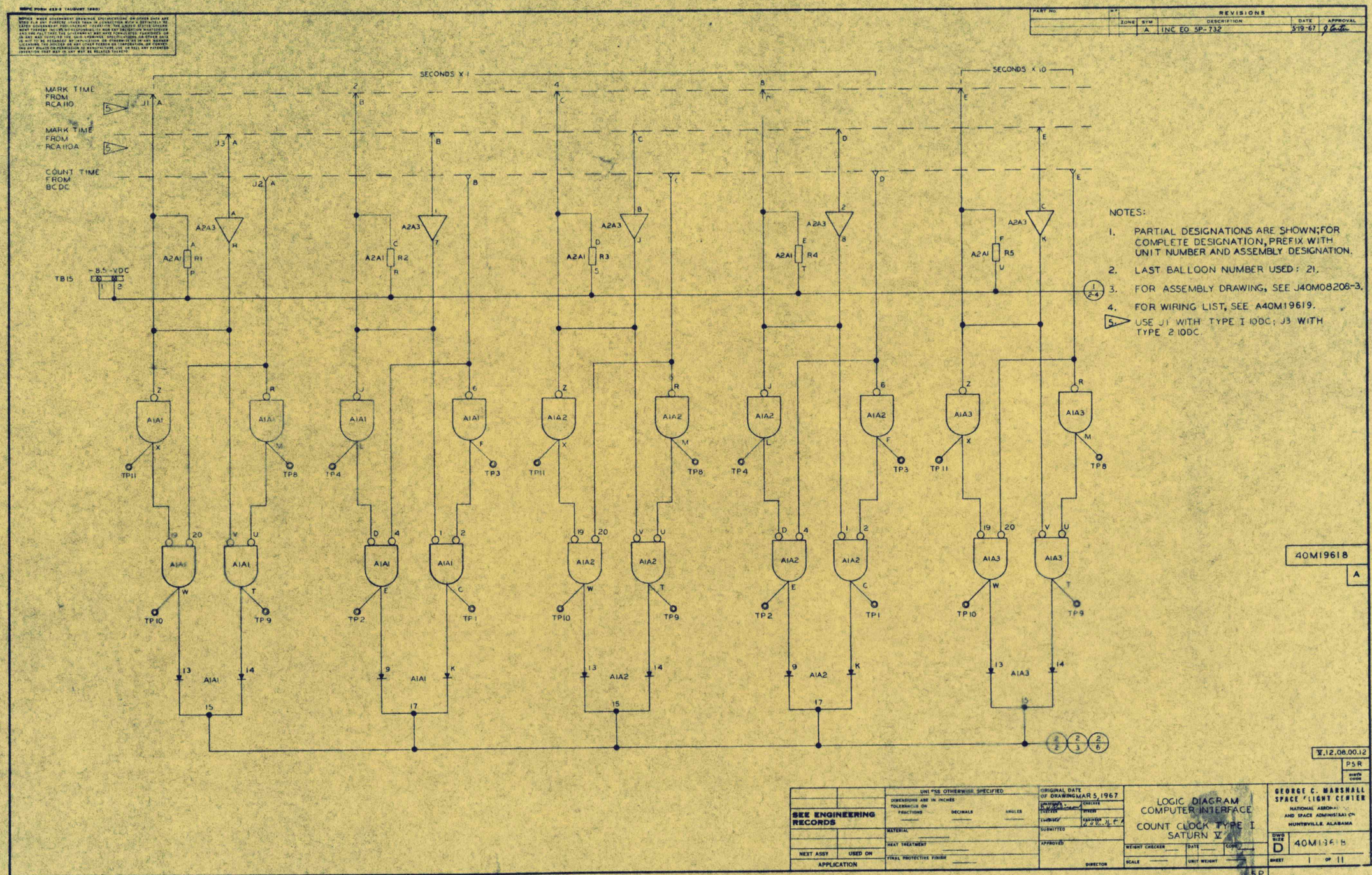
40M08297 E

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAR 9,65	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ___ DECIMALS ___ ANGLES ___	DRAWN ___ CHECKED ___ ENGR APPROVED ___ SUBMITTED ___ APPROVED ___ DIRECTOR	WEIGHT CHECKER ___ DATE ___ CODE ___ SCALE ___ UNIT WEIGHT ___	SIZE D 40M08297 SHEET 1 OF 11
NEXT ASSY	USED ON	MATERIAL ___ HEAT TREATMENT ___ FINAL PROTECTIVE FINISH ___			
APPLICATION					

ODYSSEY/ATION, INC. SH.1

Revised 6/17/65 JP

3.0



NOTES:

1. PARTIAL DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
2. LAST BALLOON NUMBER USED: 21.
3. FOR ASSEMBLY DRAWING, SEE J40M08208-3.
4. FOR WIRING LIST, SEE A40M19619.
5. USE J1 WITH TYPE I IODC; J3 WITH TYPE 2 IODC.

PARTS NO.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO SP-732	5-19-67	

40M19618 A

V,12,08.00.12 P5R

SEE ENGINEERING RECORDS

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES

MATERIAL

HEAT TREATMENT

FINAL PROTECTIVE FINISH

NEXT ASSY | USED ON | APPLICATION

ORIGINAL DATE OF DRAWING MAR 5, 1967

DRAWN | CHECKED | TRACED | ENGINEER | SUBMITTED | APPROVED | DIRECTOR

LOGIC DIAGRAM
COMPUTER INTERFACE
COUNT CLOCK TYPE I
SATURN V

WEIGHT CHECKER | DATE | COPY | SCALE | UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D | 40M19618 | SHEET 1 OF 11

5P

COPYMATION, INC. 1417

Change Date
26 June 1967

NSFC FORM 488-B (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED, BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	M F	REVISIONS			
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL
			B	SEE SHEET ONE	12-9-65	

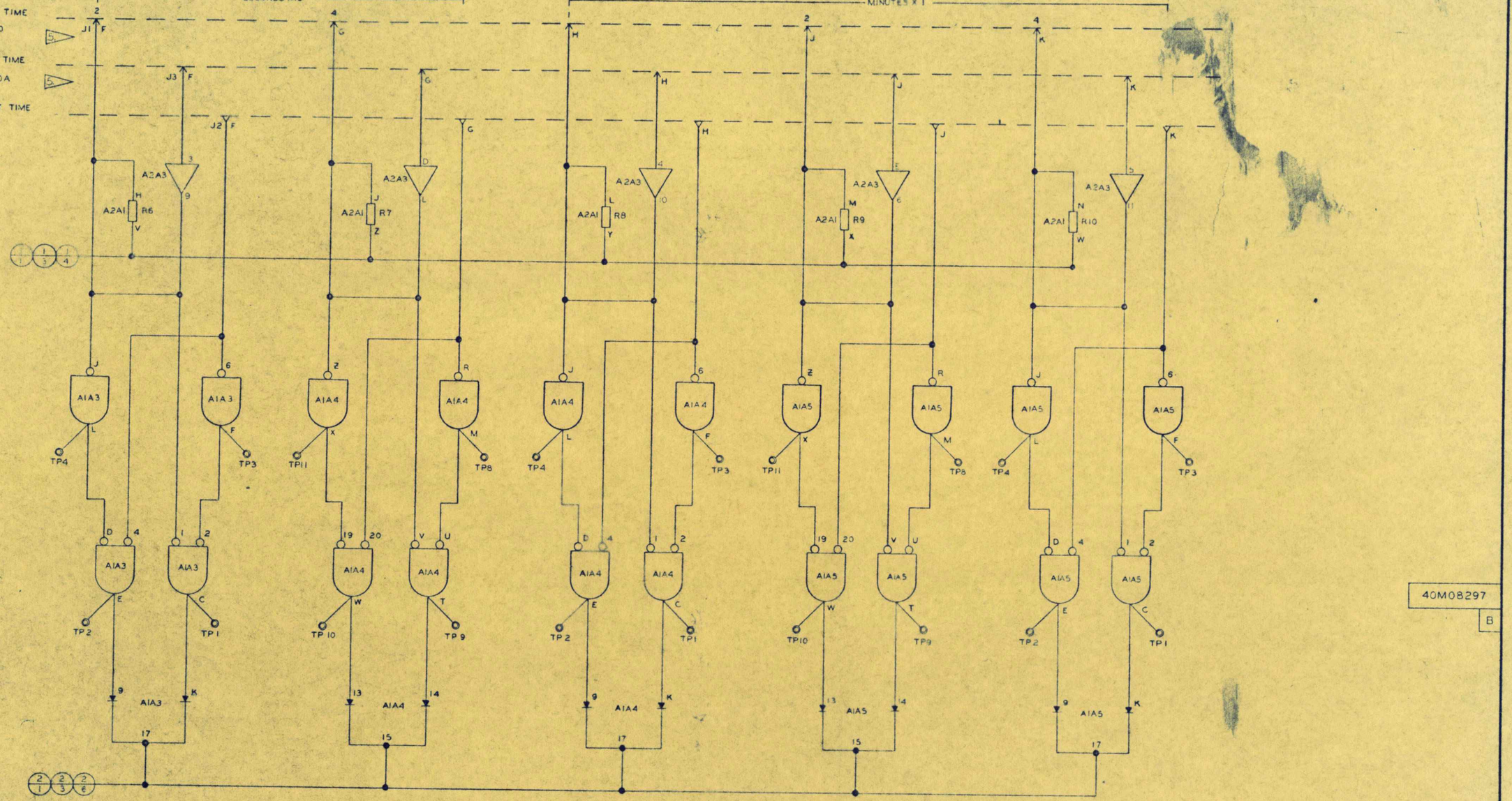
SECONDS X 10

MINUTES X 1

MARK TIME FROM RCA 110

MARK TIME FROM RCA 110A

COUNT TIME FROM BCDC



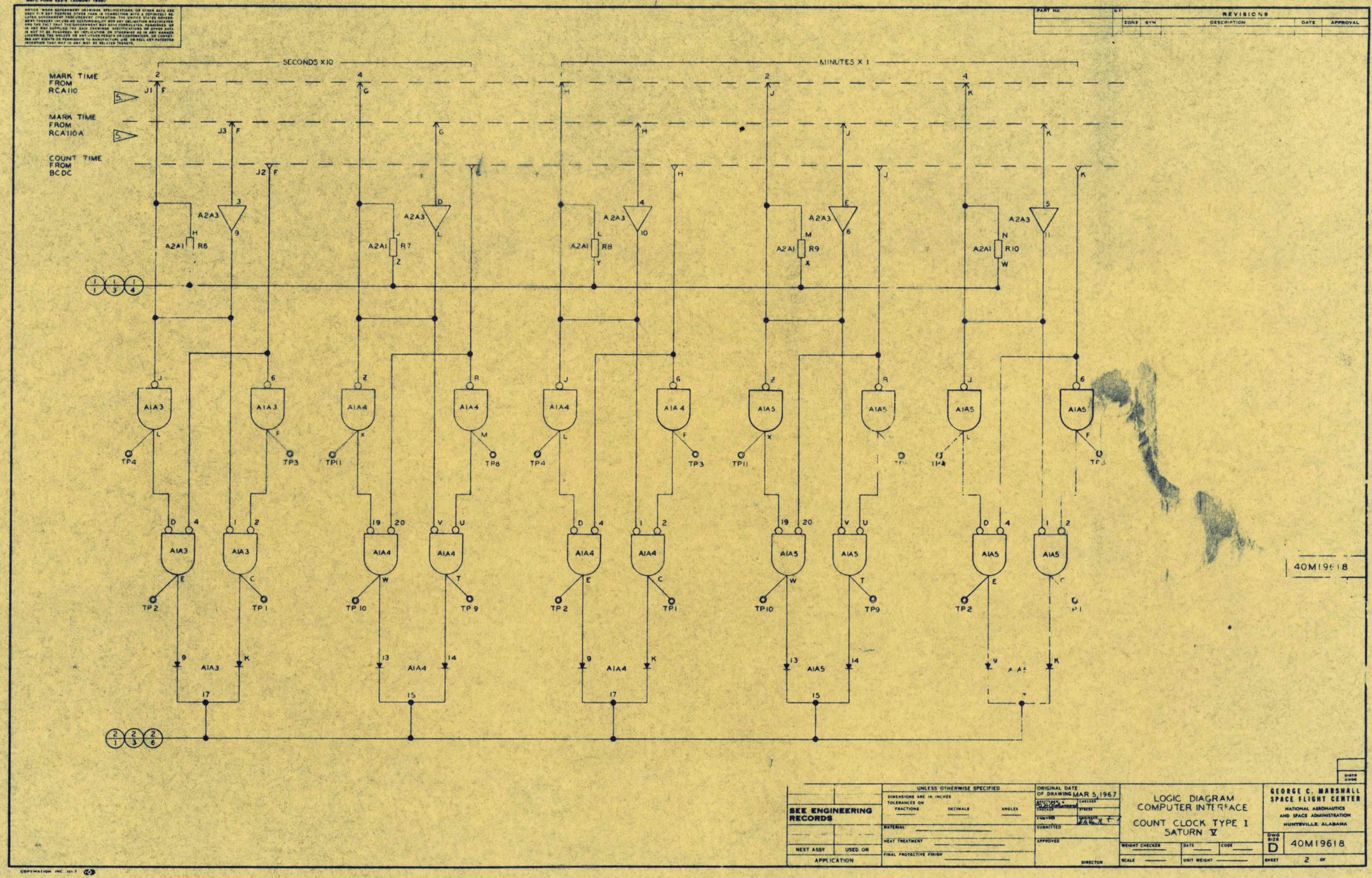
40M08297

B

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAR 3 1965	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKED ENGINEER APPROVED DIRECTOR	WEIGHT CHECKED DATE CODE SCALE UNIT WEIGHT	DWG SIZE D 40M08297 SHEET 2 OF
NEXT ASSY USED ON APPLICATION		MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH			

MSFC PSR

COPYMATION, INC. 181-7



PART NO.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA, IS NOT TO BE REGARDED, BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

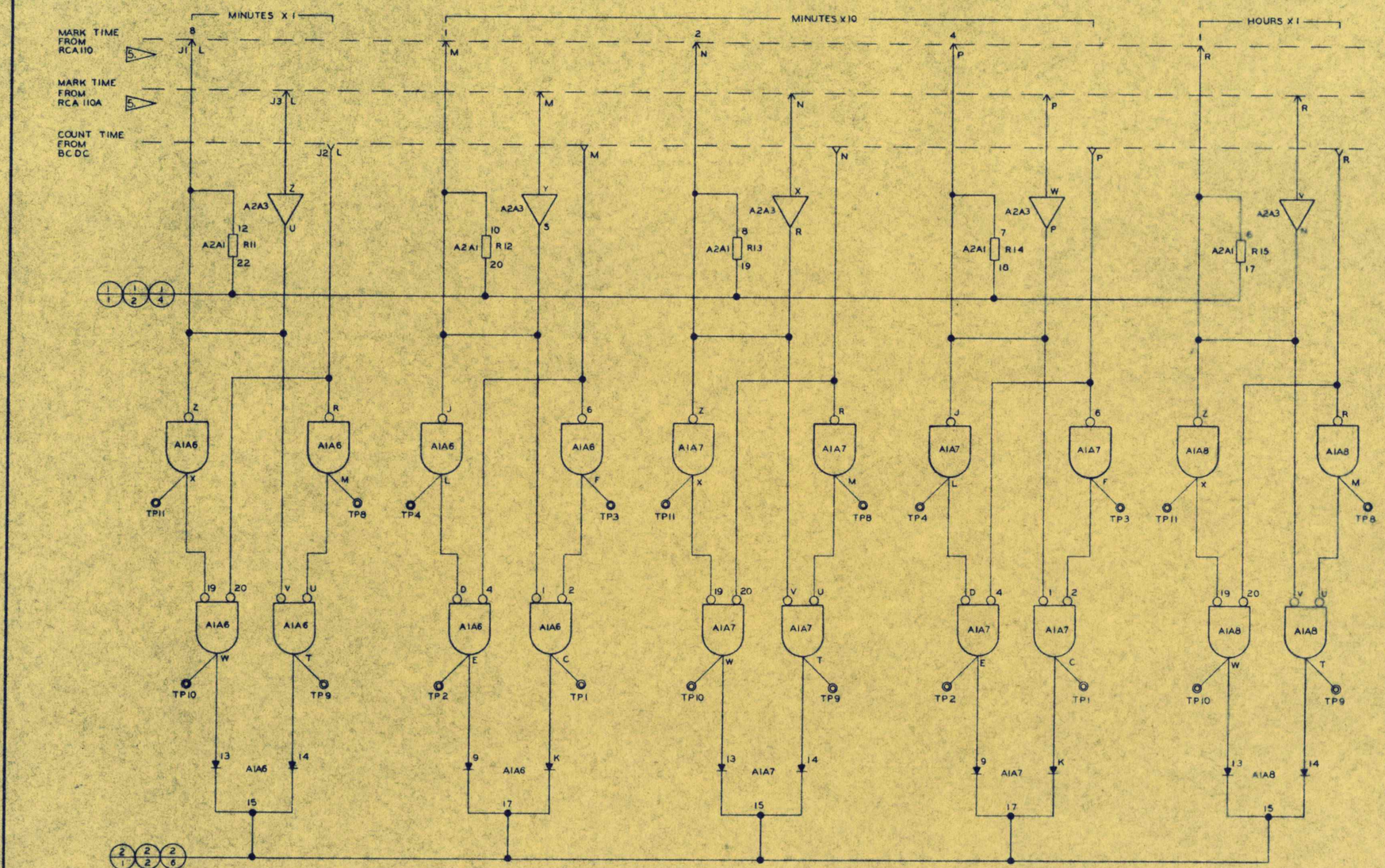
	UNLESS OTHERWISE SPECIFIED			ORIGINAL DATE OF DRAWING MAR 5, 1967		GEORGE C. MARSHALL SPACE FLIGHT CENTER
SEE ENGINEERING RECORDS	DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS	DECIMALS	ANGLES	CHECKED	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
	MATERIAL			SUBMITTED		
	HEAT TREATMENT			APPROVED		DWG SIZE D — 40M19618
NEXT ASSY / USED ON	FINAL PROTECTIVE FINISH			DIRECTOR	WEIGHT CHECKER / DATE / CODE	SHEET 2 OF
APPLICATION					SCALE / UNIT WEIGHT	

40M19618

Change Date
26 June 1967

NOTICE- WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	NEXT	REVISIONS			
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M19618

UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAR 5, 1967	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAWN CHECKED ENGR APPVD PROJ MGR SUBMITTED APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE SCALE UNIT WEIGHT	SIZE D 40M19618 SHEET 3 OF
MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH			
SEE ENGINEERING RECORDS NEXT ASSY USED ON APPLICATION			

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Change Date
26 June 1967

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE U. S. GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS					
ZONE	SYM	DESCRIPTION	DATE	APPROVAL	

MINUTES X 1 — MINUTES X 10 — HOURS X 1

MARK TIME FROM RCA 110

MARK TIME FROM RCA 110A

COUNT TIME FROM BCDC

A2A3 A2A1 R11 12 22 — A2A3 A2A1 R12 10 20 — A2A3 A2A1 R13 8 19 — A2A3 A2A1 R14 7 18 — A2A3 A2A1 R15 6 17

A1A6 — A1A7 — A1A8

TP11 TP8 TP4 TP3 TP10 TP9 TP2 TP1

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAR 9, 65; APPROVED; DIRECTOR	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY	USED ON			WEIGHT CHECKER; SCALE; DATE; UNIT WEIGHT; CODE	DWG SIZE D — 40M08297 — SHEET 3 OF
APPLICATION					

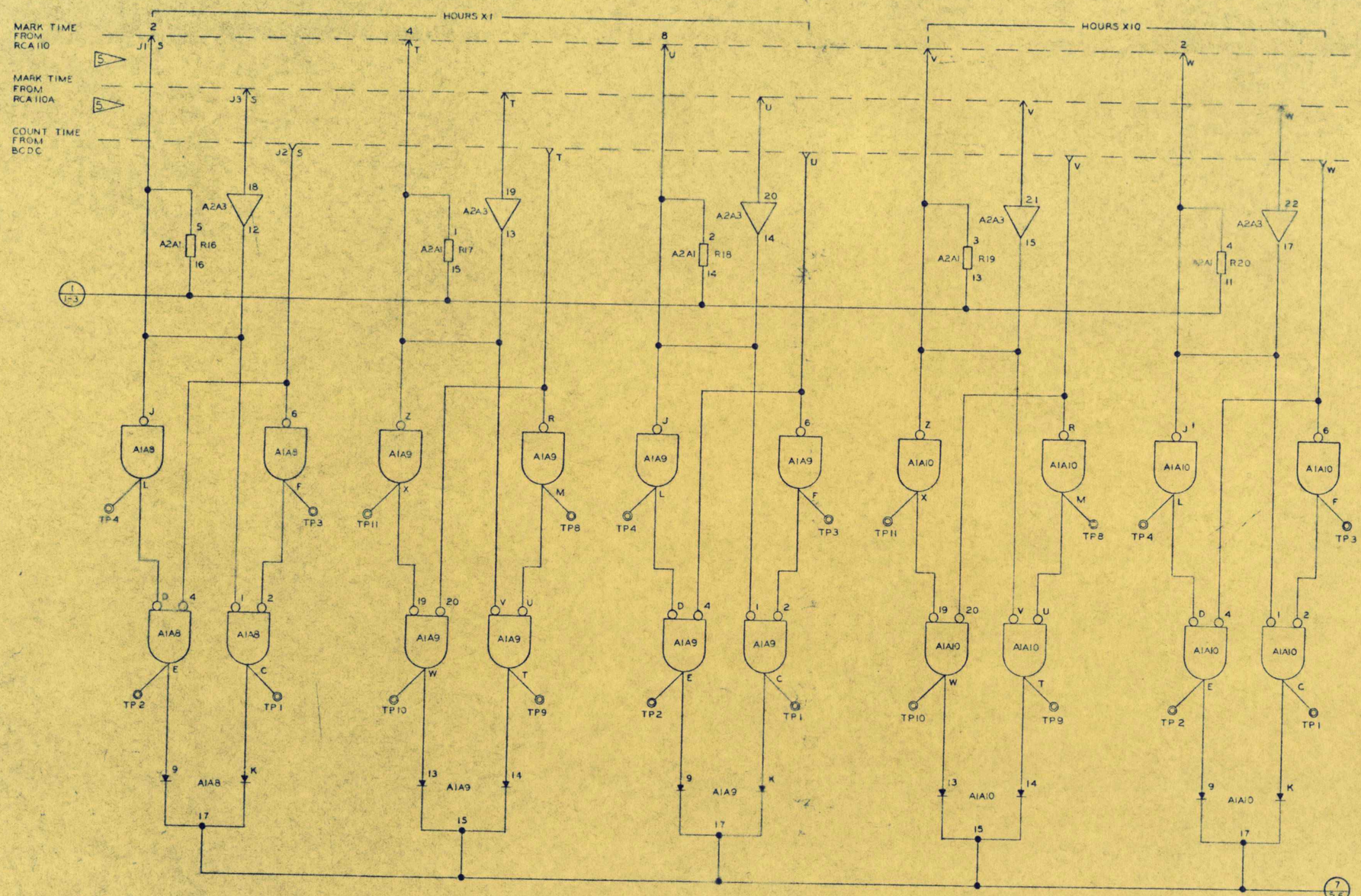
40M08297

COPYMATION, INC. 101-5

NASA FORM 422-3 (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	REV	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



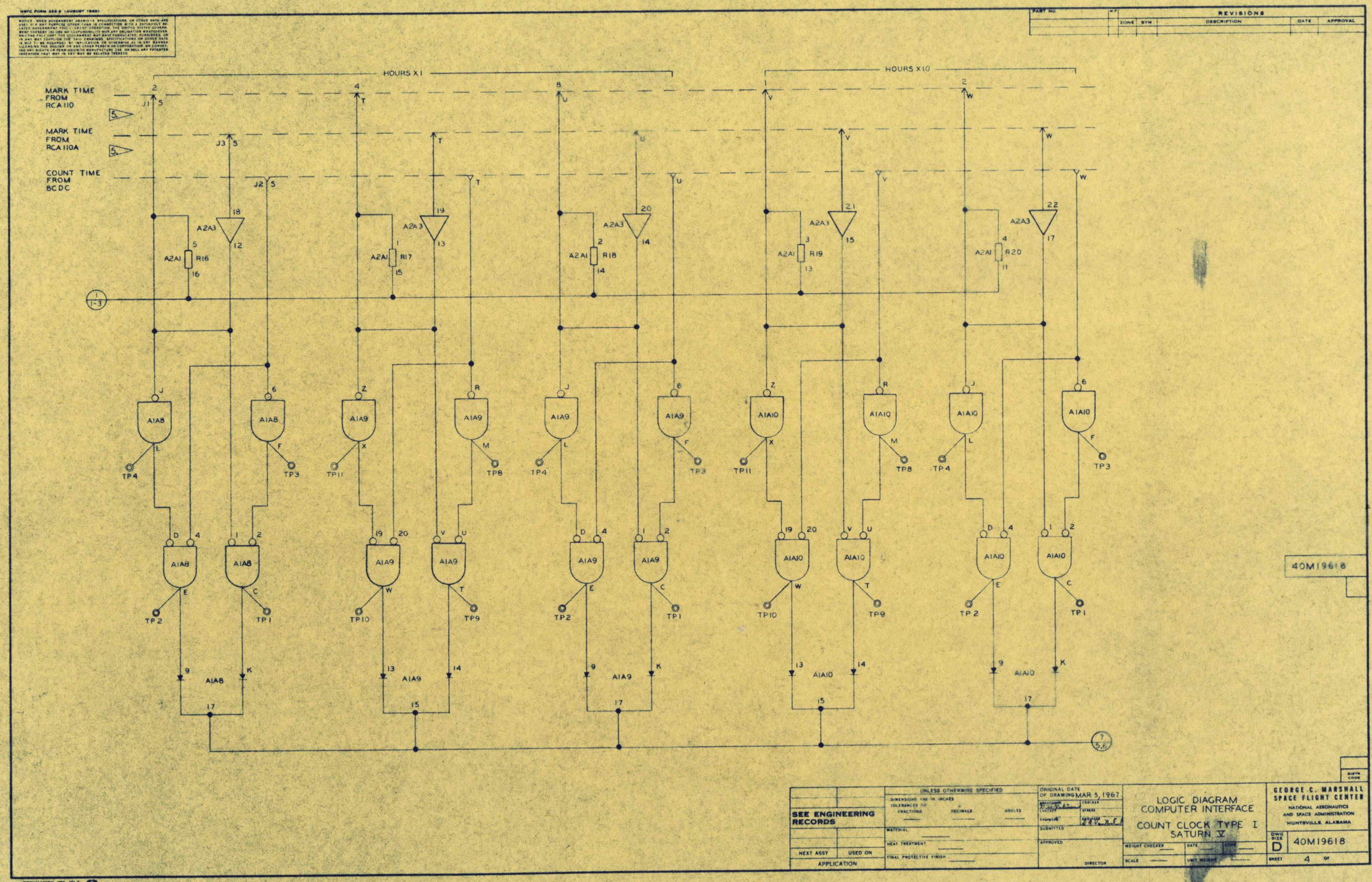
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCE ON FRACTIONS ___ DECIMALS ___ ANGLES ___; MATERIAL ___; HEAT TREATMENT ___; FINAL PROTECTIVE FINISH ___	ORIGINAL DATE OF DRAWING MAR 9,65	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V
NEXT ASSY USED ON APPLICATION		APPROVED DIRECTOR	WEIGHT CHECKED ___ DATE ___ CODE ___; SCALE ___ UNIT WEIGHT ___

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40M08297 — SHEET 4 OF

40M08297

COPYMATION, INC. 121-7



REVISIONS					
ZONE	SYM	DESCRIPTION	DATE	APPROVAL

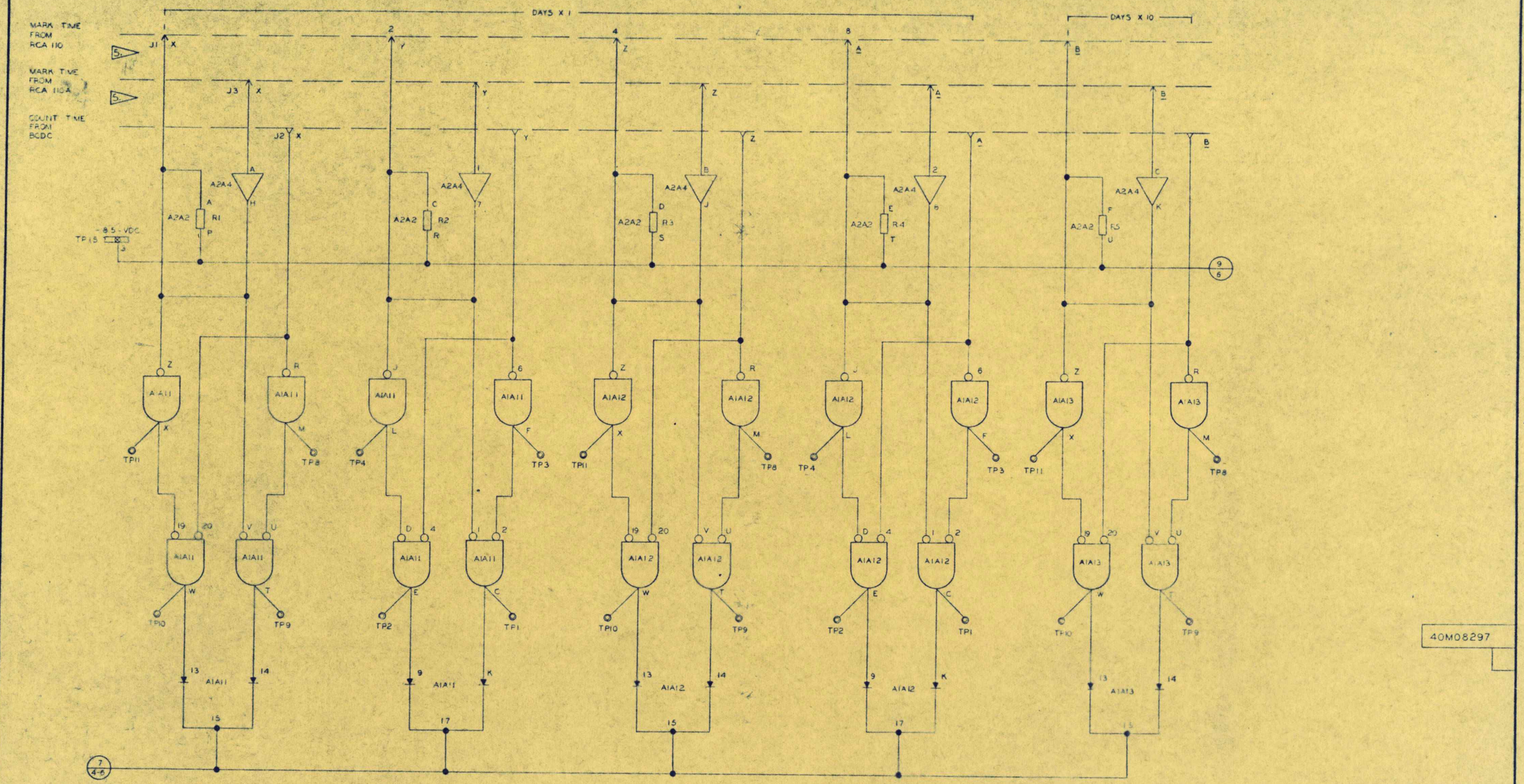
40M19618

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING MAR 5, 1967	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	SUBMITTED; APPROVED; DIRECTOR	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
		WEIGHT CHECKED / DATE / CODE; SCALE / UNIT WEIGHT	DWG SIZE D; 40M19618; SHEET 4 OF

Change Date
26 June 1967

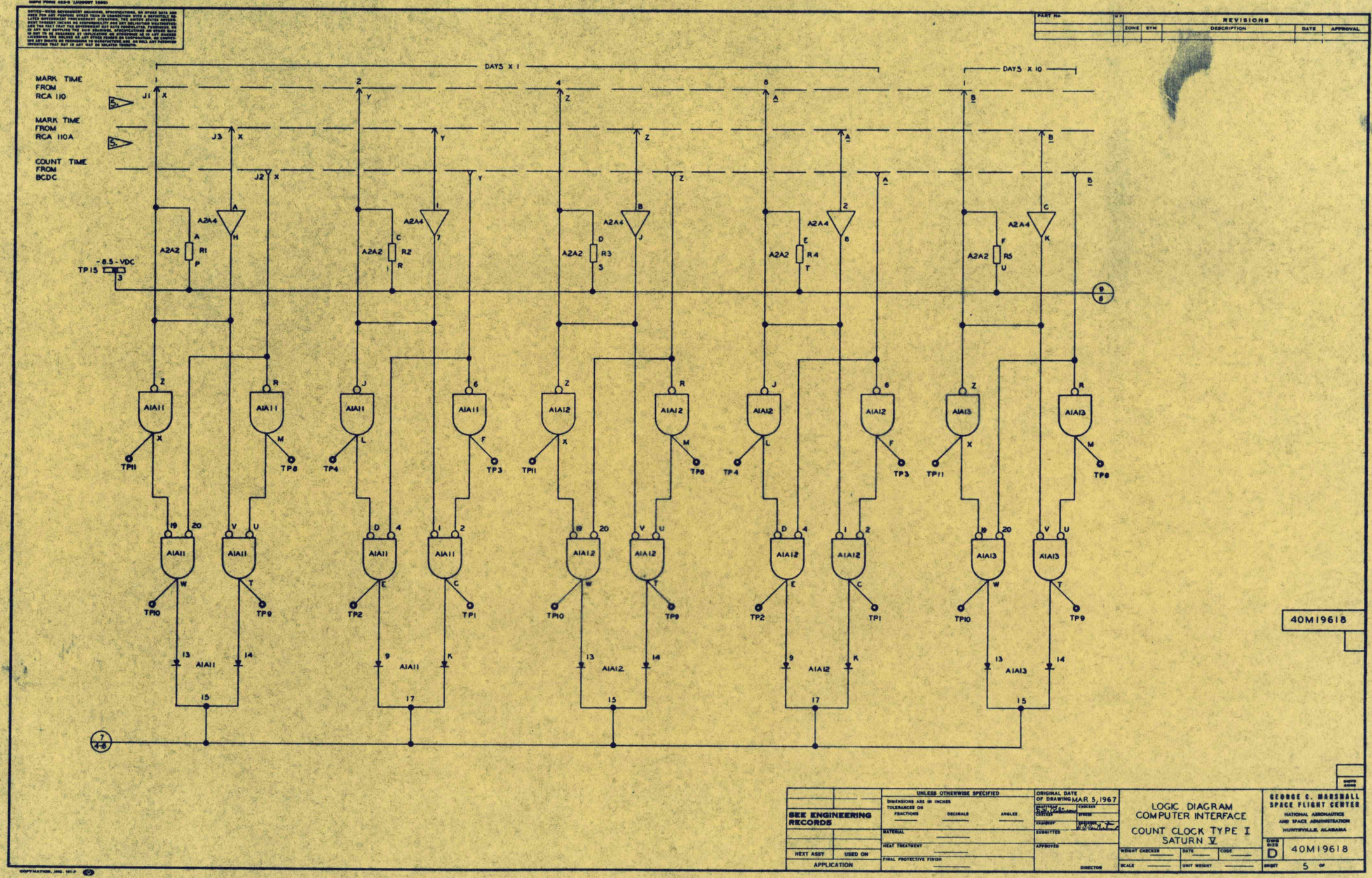
NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



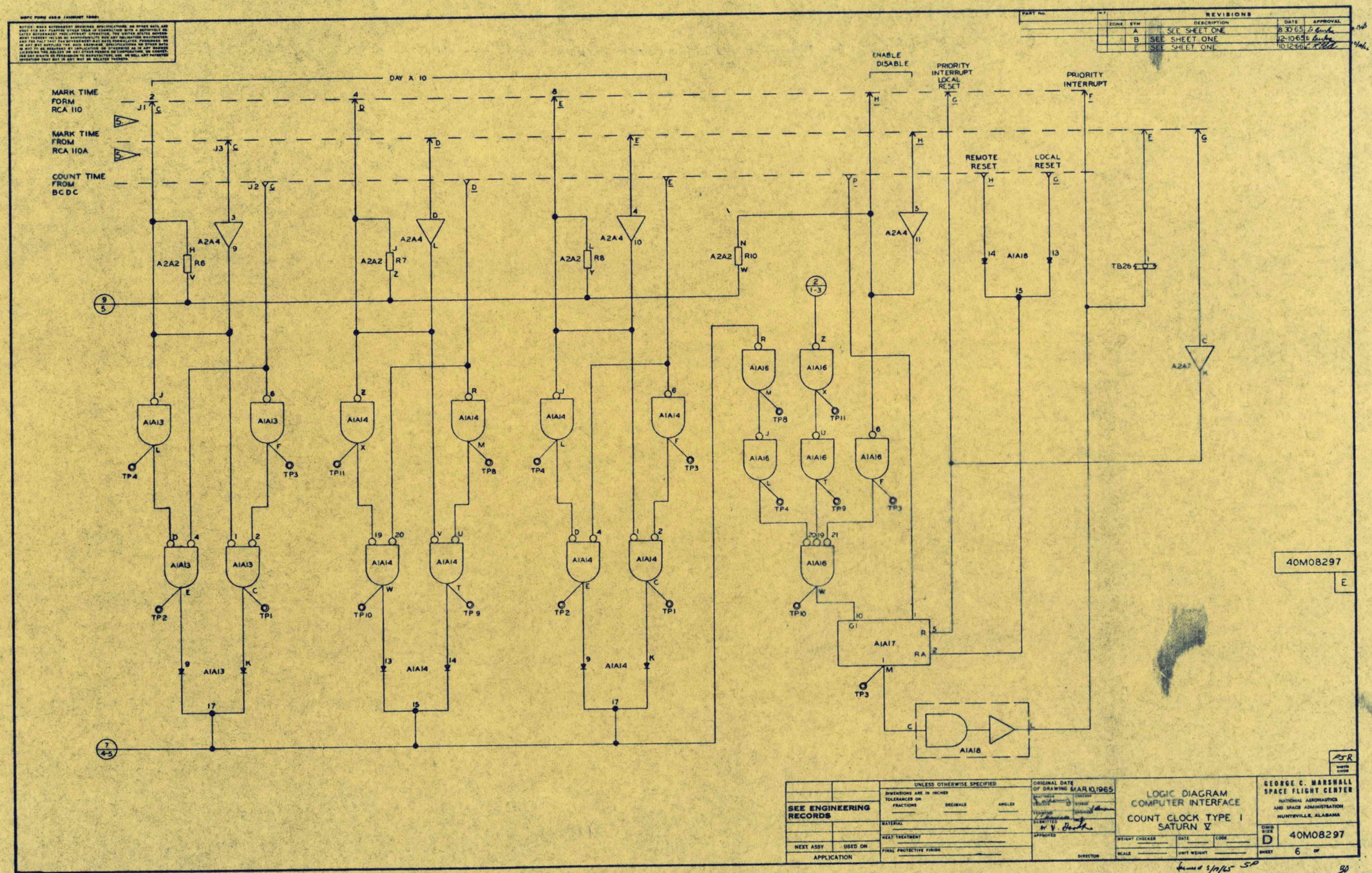
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAR 16 '65; DRAFTSMAN; CHECKER; STRESS; ENGINEER; SUBMITTED; APPROVED; DIRECTOR	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON APPLICATION			WEIGHT CHECKER; DATE; CODE; SCALE; UNIT WEIGHT; SHEET 5 OF	DWG SIZE D; 40M08297

40M08297



SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH; NEXT ASSY, USED ON APPLICATION	ORIGINAL DATE OF DRAWING MAR 5, 1967; DRAFTING, CHECKER, STANDARDS, SUBMITTED, APPROVED, DIRECTOR	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V; WEIGHT CHECKER, DATE, CODE, SCALE, UNIT WEIGHT	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA; SIZE D; 40M19618; SHEET 5 OF

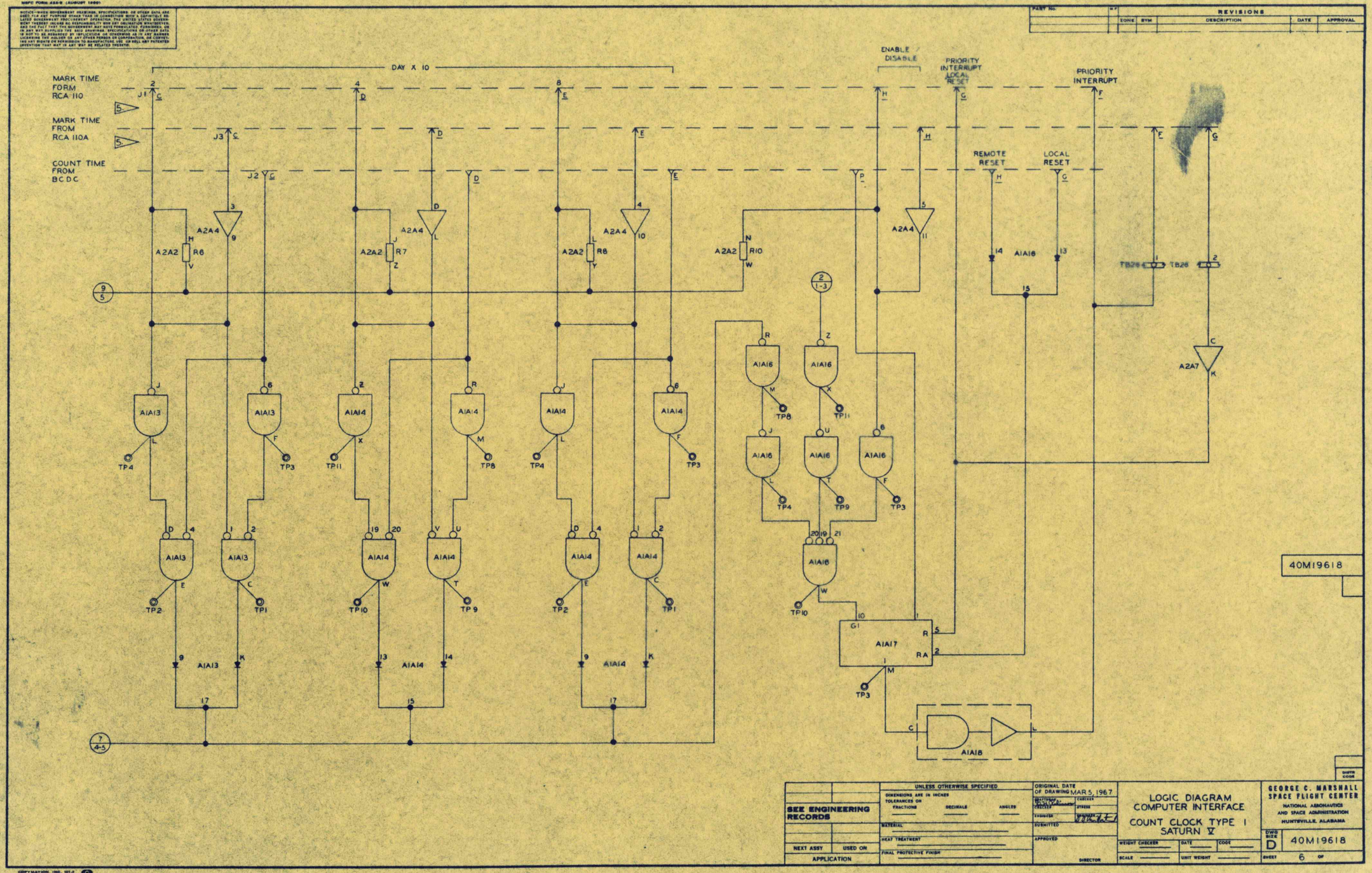
Change Date
26 June 1967



REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	SEE SHEET ONE	8 30 65	
	B	SEE SHEET ONE	12-10-65	
	E	SEE SHEET ONE	10 12-66	

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAR 10 1965	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON / APPLICATION			GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
			SIZE D — 40M08297 — SHEET 6 OF

40M08297 E



PART NO.	M F	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAR 5, 1967	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTING SUPERVISOR CHECKED ENGINEER SUBMITTED APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE SCALE UNIT WEIGHT	SIZE D 40M19618 SHEET 6 OF
NEXT ASSY	USED ON	MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH			
APPLICATION					

40M19618

COPYMATION, INC. 101-2

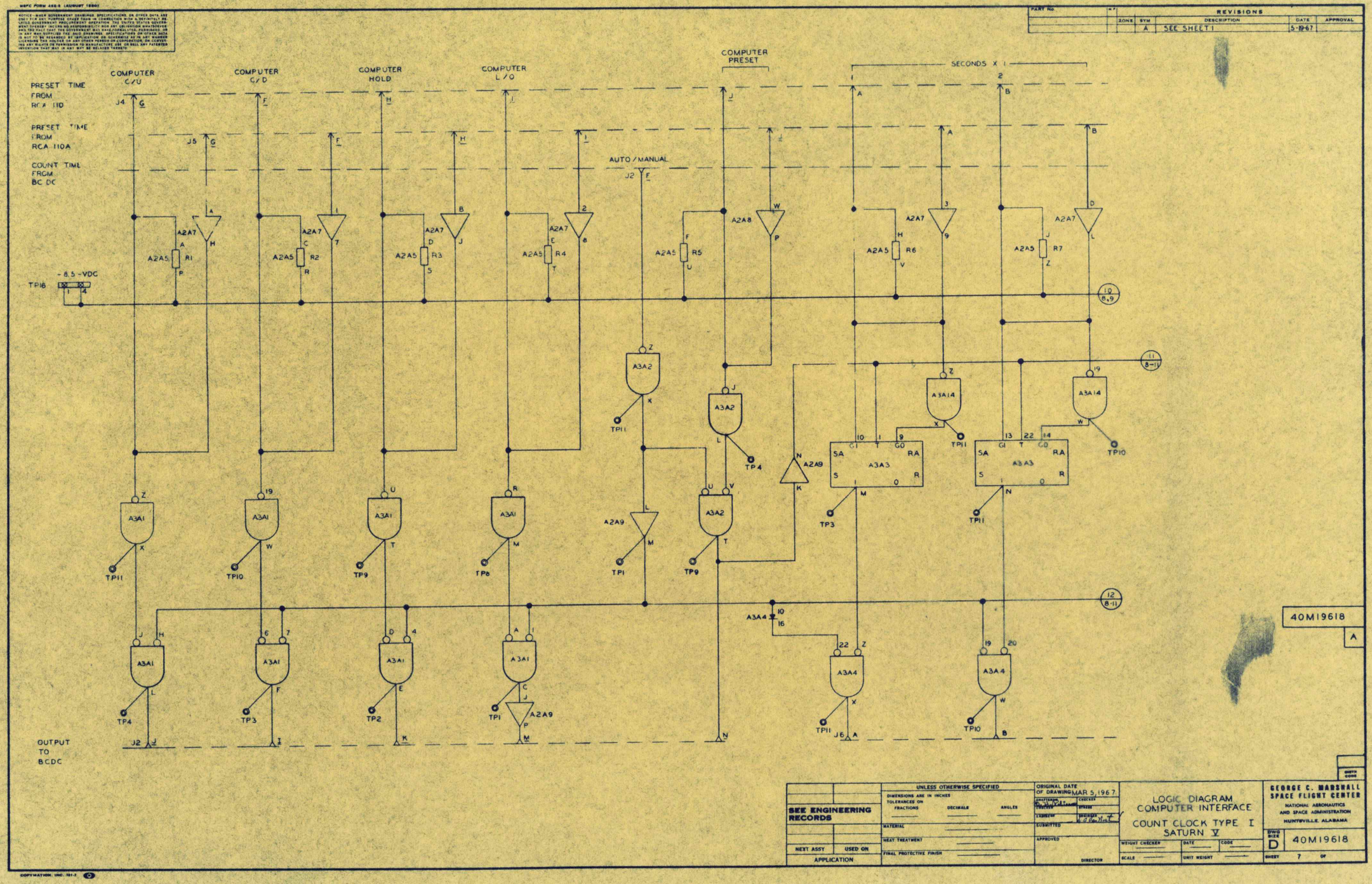
Change Date
26 June 1967

REVISIONS			
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	SEE SHEET ONE	5-3-65	
	B	SEE SHEET ONE	12-10-65	
	C	SEE SHEET ONE	12-10-65	
	D	SEE SHEET ONE	2-2-66	

PRESET TIME FROM RCA 110
PRESET TIME FROM RCA 110A
COUNT TIME FROM BC DC
COMPUTER C/U
COMPUTER C/D
COMPUTER HOLD
COMPUTER L/O
COMPUTER PRESET
SECONDS X 1
AUTO/MANUAL
+5.34VDC
TP10
A2A5 R1
A2A5 R2
A2A5 R3
A2A5 R4
A2A5 R5
A2A5 R6
A2A5 R7
A2A7
A3A1
A3A2
A3A3
A3A4
A3A14
A2A9
TP1
TP2
TP3
TP4
TP8
TP9
TP10
TP11
OUTPUT TO BCDC

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING MAR 11 65	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON	MATERIAL	DRAFTSMAN / CHECKER	GEORGE C. MARSHALL SPACE FLIGHT CENTER
APPLICATION	HEAT TREATMENT	ENGR / DESIGN	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
	FINAL PROTECTIVE FINISH	APPROVED / DIRECTOR	HUNTSVILLE, ALABAMA
		WEIGHT CHECKED / DATE / CODE	DWG SIZE D — 40M08297
		SCALE / UNIT WEIGHT	SHEET 7 OF

40M08297
D

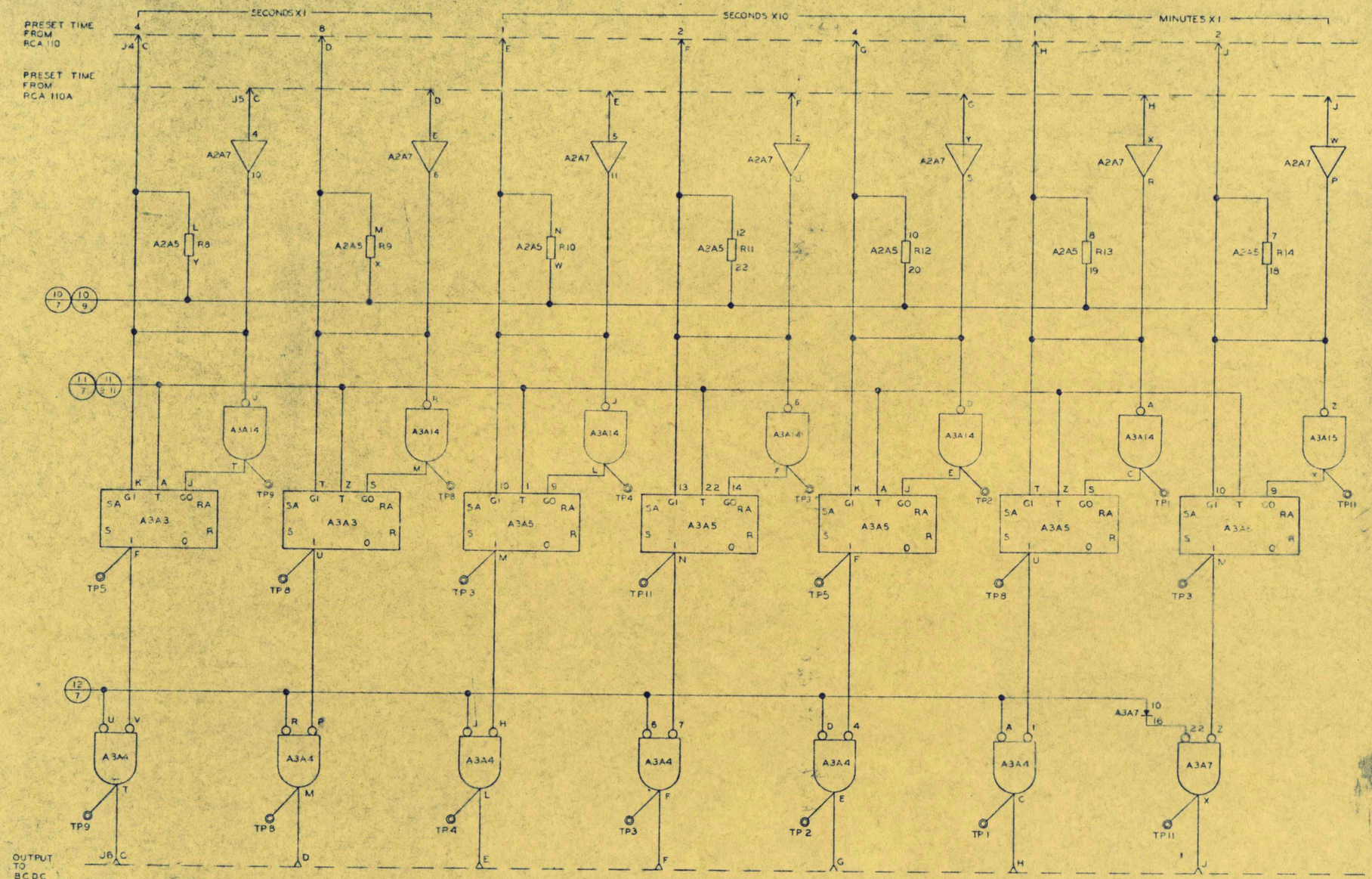


Change Date
26 June 1967

MSFC FORM 433-3 (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FURNISHED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
		A	SEE SHEET ONE	12-9-65	
		B	SEE SHEET ONE	12-9-65	
		C	SEE SHEET ONE	12-9-65	



		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAR 11,65	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ___ DECIMALS ___ ANGLES ___	DRAFTSMAN T.J. CHECKER		SIZE D 40M08297
		MATERIAL ___	CHECKED J. Brown DESIGN		
		HEAT TREATMENT ___	SUBMITTED by D. Shaw APPROVED		
NEXT ASSY	USED ON	FINAL PROTECTIVE FINISH ___	DIRECTOR	WEIGHT CHECKER ___ DATE ___ CODE ___	SHEET 8 OF
APPLICATION				SCALE ___ UNIT WEIGHT ___	

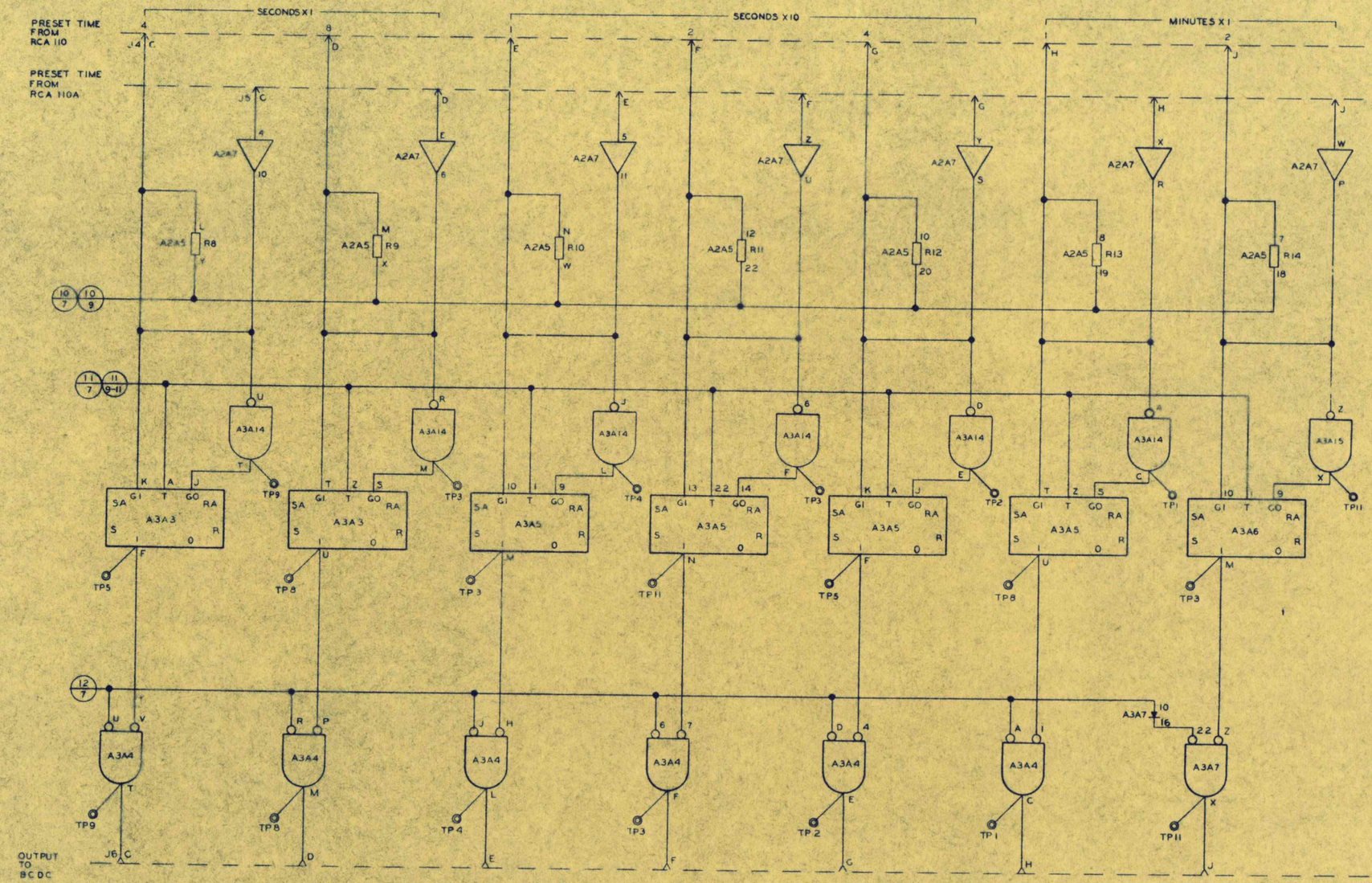
40M08297 C

COPYMATION, INC., NY.

MSFC FORM 482-S (AUGUST 1966)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	M F	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL

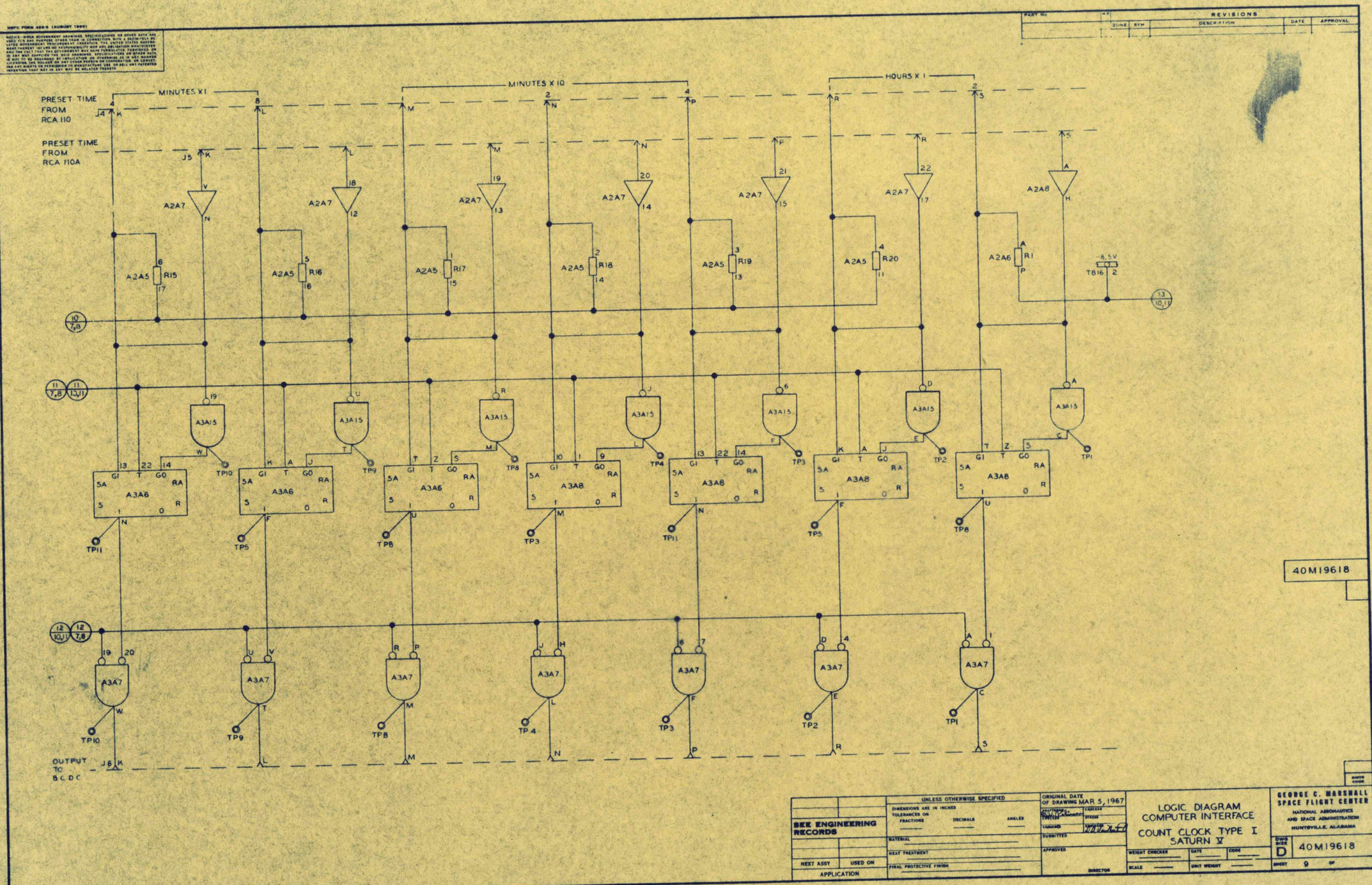


40M19618

UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAR 5, 1967	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
DIMENSIONS ARE IN INCHES. TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTING CHECKER		SIZE D
MATERIAL	ENGINEER SUBMITTED		40M19618
HEAT TREATMENT	APPROVED		SHEET 8 OF
FINAL PROTECTIVE FINISH	DIRECTOR		
SEE ENGINEERING RECORDS			
NEXT ASSY USED ON APPLICATION			

COPYMATION, INC. 101-7

Change Date
26 June 1967



Change Date
26 June 1967

NSFC FORM 468-8 (AUGUST 1966)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	SEE SHEET ONE	8-4-65	
		B	SEE SHEET ONE	11-2-65	
		C	SEE SHEET ONE	12-9-65	

PRESET TIME FROM RCA 110

PRESET TIME FROM RCA 110A

MINUTES X1 — MINUTES X10 — HOURS X1

A2A7 A2A8 A2A5 R15 R16 R17 R18 R19 R20 A2A6 R1 -8.5V TB16 2

A3A15 A3A6 A3A8 A3A7

TP10 TP9 TP8 TP3 TP4 TP3 TP2 TP1

TP11 TP5 TP8 TP3 TP11 TP5 TP8

TP10 TP9 TP8 TP4 TP3 TP2 TP1

OUTPUT TO BCDC J6 K

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAR 12 1965	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ___ DECIMALS ___ ANGLES ___	DRAFTSMAN CHECKER ENGINEER SUBMITTED ENGINEER APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE SCALE ___ UNIT WEIGHT ___ SHEET 3 OF	SIZE D 40M08297
NEXT ASSY	USED ON	MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH			
APPLICATION					

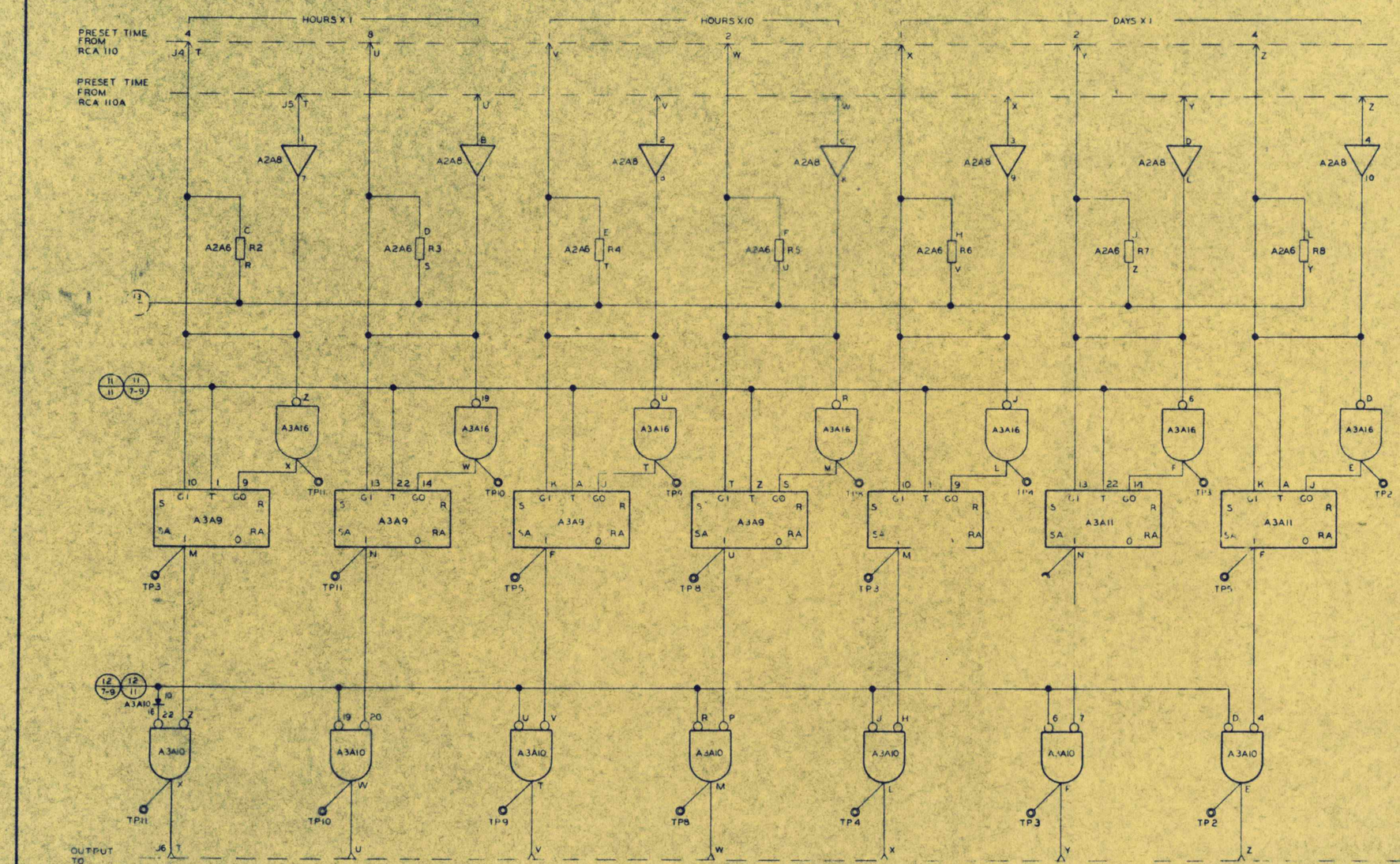
40M08297 C

DATA CODE

COPYMATION, INC., 101-7

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY, IN ANY WAY BE RELATED THERETO.

PART NO.	H.F.	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL

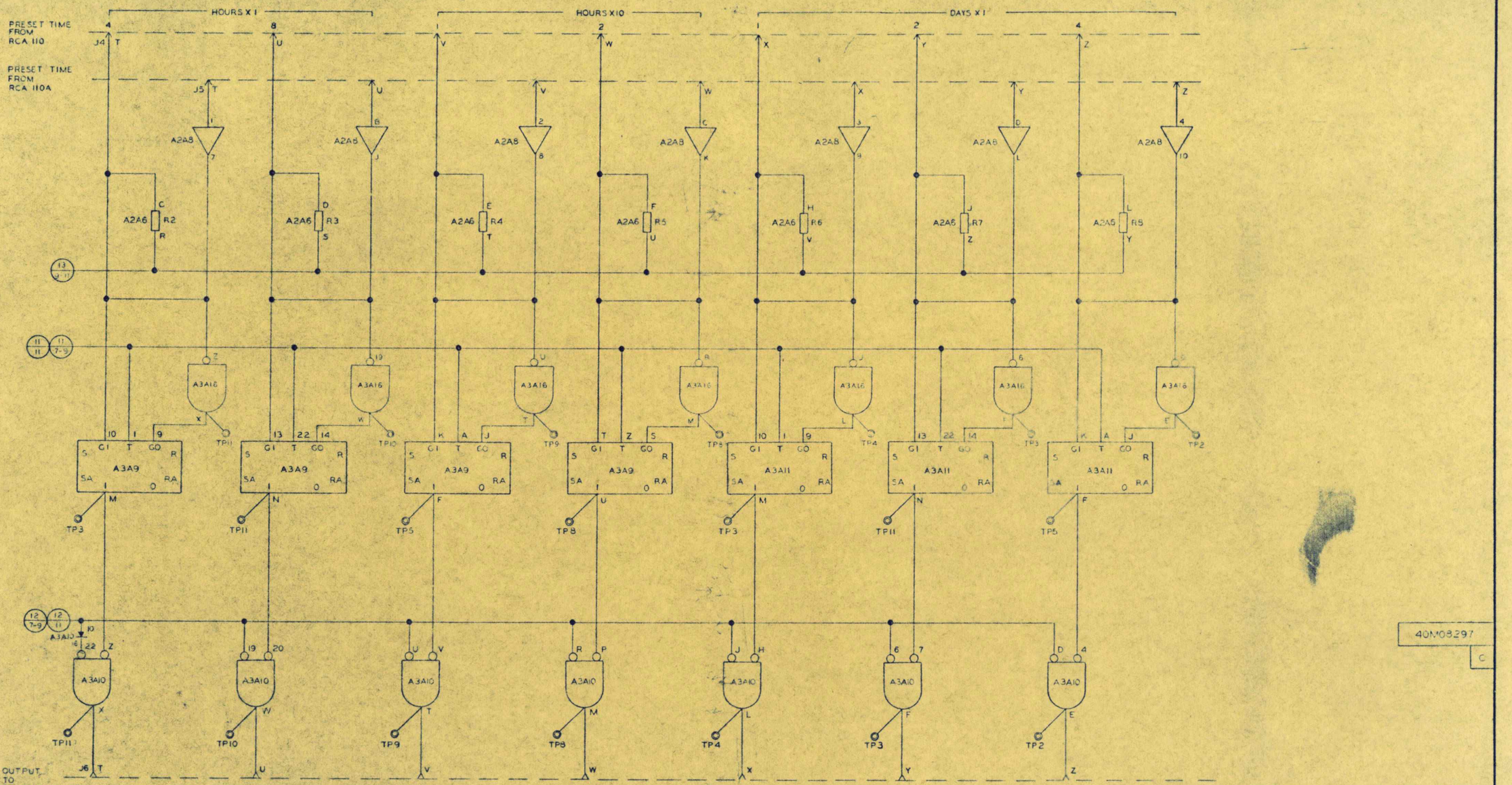


SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING MAR 5, 1967	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON: APPLICATION	MATERIAL; HEAT TREATMENT; FINISH; PROTECTIVE FINISH	APPROVED: DIRECTOR	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
			DWG SIZE D — 40M19618 — SHEET 10 OF

40M19618

Change Date
26 June 1967

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	SEE SHEET ONE	2-30-65	
	B	SEE SHEET ONE	12-3-65	
	C	SEE SHEET ONE	12-9-65	

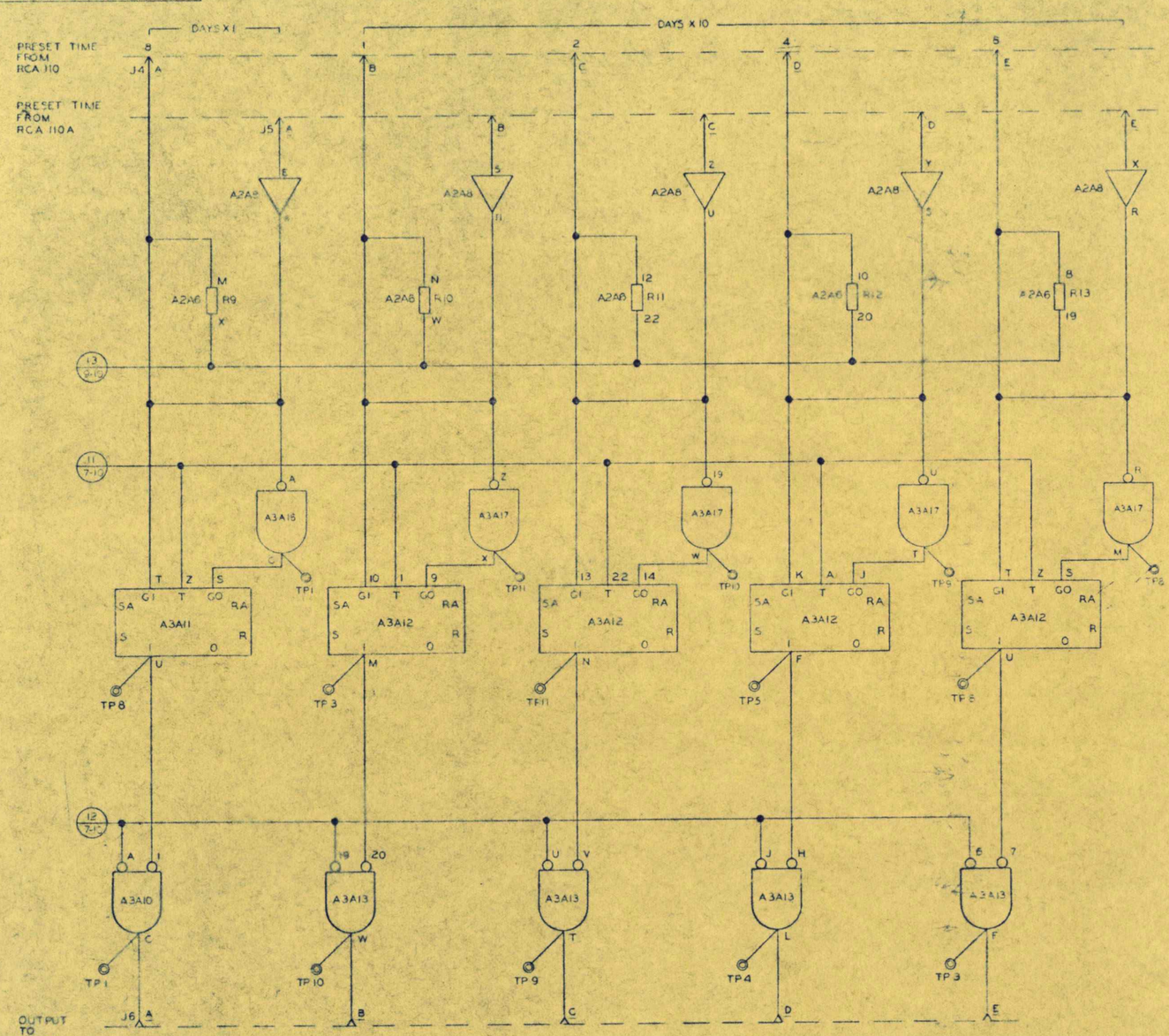


40M08297
C

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAR 11,65	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON APPLICATION		APPROVED DIRECTOR	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
			DWG SIZE D — 40M08297 — SHEET 10 OF

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS			
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	SEE SHEET ONE	8-30-65	
	B	SEE SHEET ONE	12-9-65	
	C	SEE SHEET ONE	12-9-65	



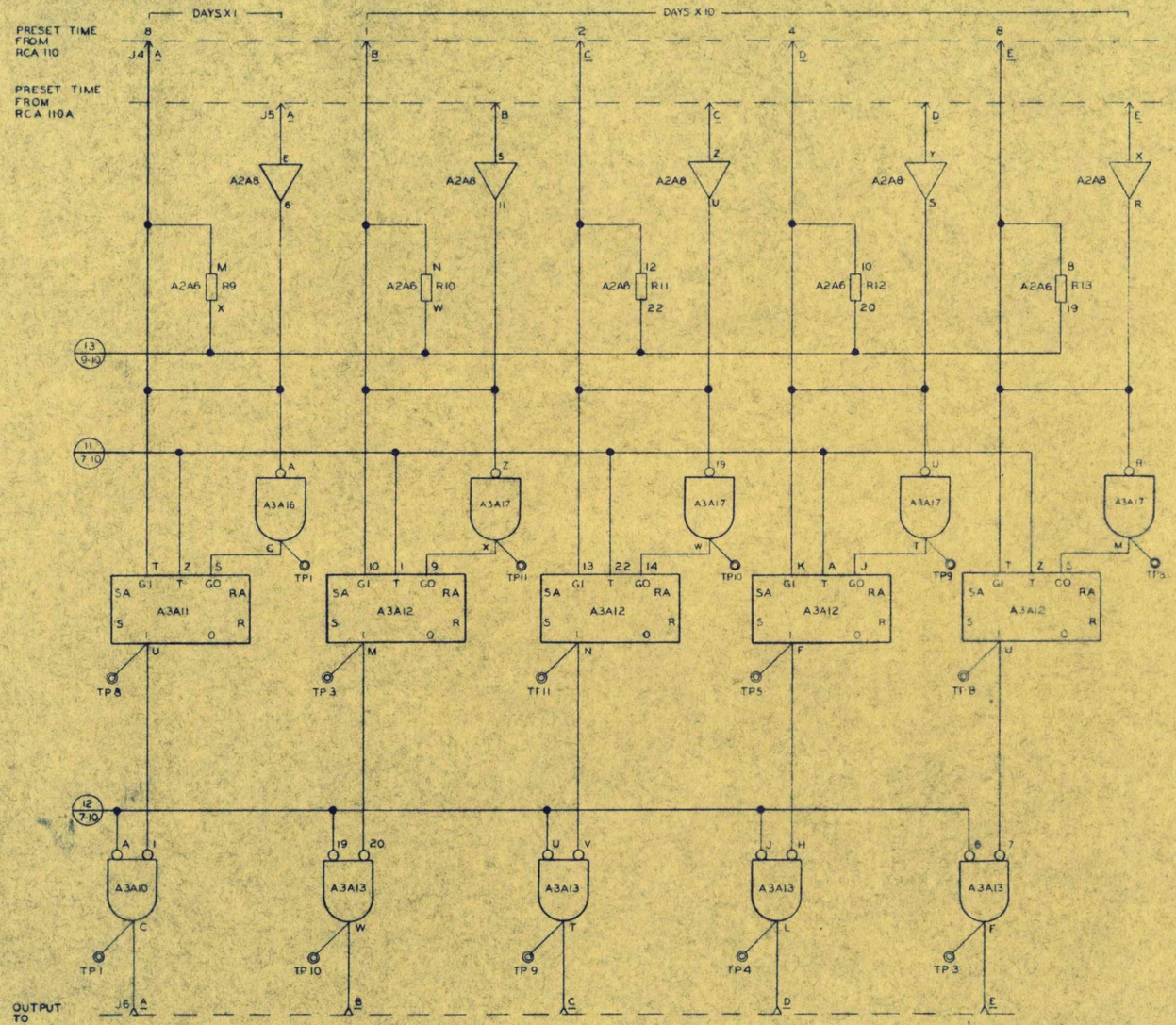
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING MAR 1,65	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON	MATERIAL	CHECKED / ENGINEER / APPROVED / DIRECTOR	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
APPLICATION	HEAT TREATMENT / FINAL PROTECTIVE FINISH	WEIGHT / SCALE / DATE / CODE / UNIT WEIGHT	DWG SIZE D — 40M08297 — SHEET 11 OF 11

40M08297 C

NASA FORM 488-B (AUGUST 1960)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL

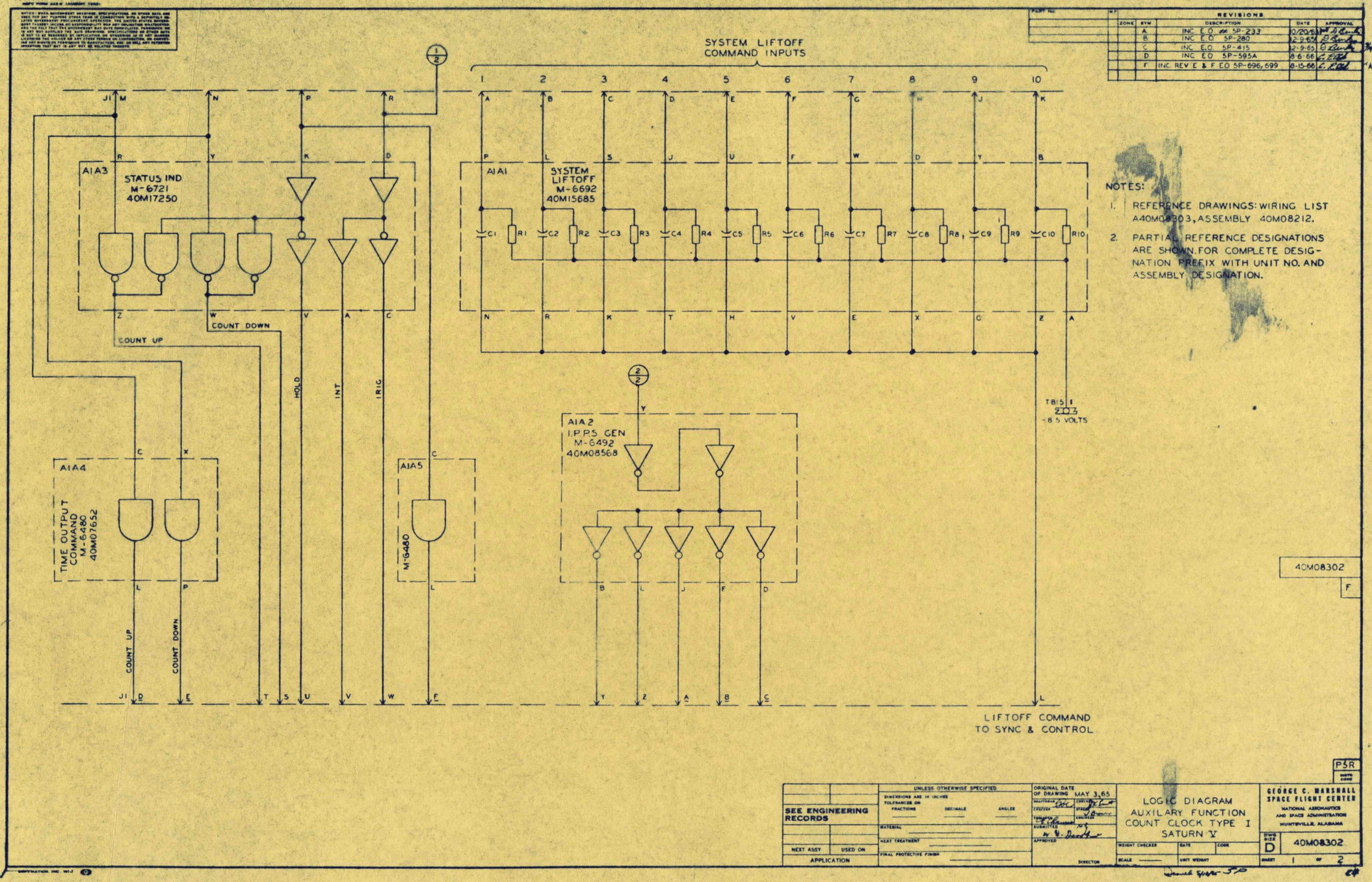


SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAR 5, 1967; DRAFTSMAN; CHECKER; STRESS; WEIGHT; SUBMITTED; APPROVED; DIRECTOR	LOGIC DIAGRAM COMPUTER INTERFACE COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON / APPLICATION			WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT	DWG SIZE D 40M19618; SHEET 11 OF 11

40M19618

COPYMATION, INC. 161-7

Change Date
26 June 1967



Change Date
30 November, 1966

PART NO.	QTY	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
			A	INC E.O. 5P-233	6/20/64	
			B	INC E.O. 5P-280	2-2-65	
			C	INC E.O. 5P-415	8-2-65	
			D	INC EO 5P-595A	8-6-66	
			F	INC REV E & F EO 5P-696, 699	8-15-66	
			G	INC REV G EO 5P-750	5-19-67	

SYSTEM LIFTOFF COMMAND INPUTS

A1A3 STATUS IND M-6721 40M17250

A1A1 SYSTEM LIFTOFF M-6692 40M15685

A1A2 I.P.P.S GEN M-6492 40M08568

A1A4 TIME OUTPUT COMMAND M-6480 40M07652

A1A5 M-6480

COUNT UP

COUNT DOWN

HOLD

INT

IRIG

TB15 I 2013 -8.5 VOLTS

NOTES:

1. REFERENCE DRAWINGS: WIRING LIST A40M08303, ASSEMBLY 40M08212.
2. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION.

40M08302 G

P5R

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING MAY 3,65	LOGIC DIAGRAM AUXILARY FUNCTION COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED DIRECTOR	WEIGHT CHECKED; DATE; CODE; SCALE; UNIT WEIGHT

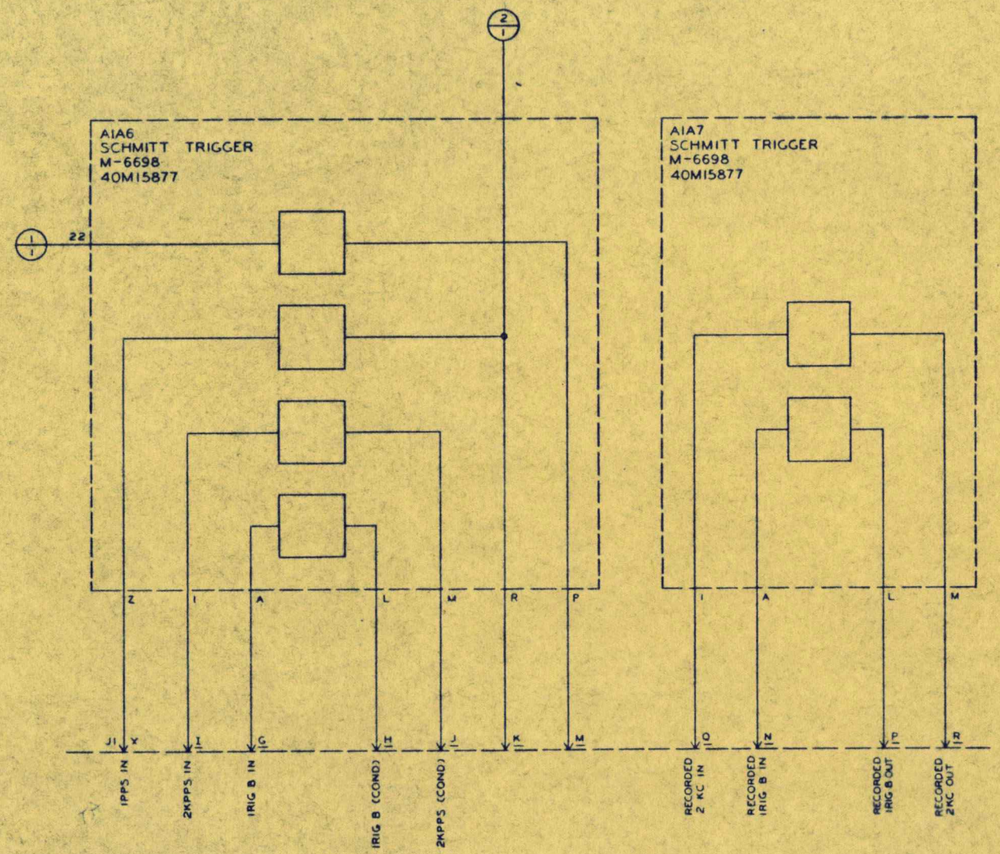
GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA

Drawing Size D — 40M08302 — SHEET 1 OF 2

Change Date
26 June 1967

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M08302

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING AUG 15, 1966	LOGIC DIAGRAM AUXILIARY FUNCTION COUNT CLOCK TYPE I	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
	MATERIAL	DRAFTSMAN [illegible] CHECKER [illegible]	SATURN V	DWG SIZE D	40M08302
	HEAT TREATMENT	CHECKER			
NEXT ASSY / USED ON	FINAL PROTECTIVE FINISH	ENGINEER	WEIGHT CHECKER / DATE / CODE	SHEET 2 OF 2	
APPLICATION		SUBMITTED / APPROVED / DIRECTOR	SCALE / UNIT WEIGHT		

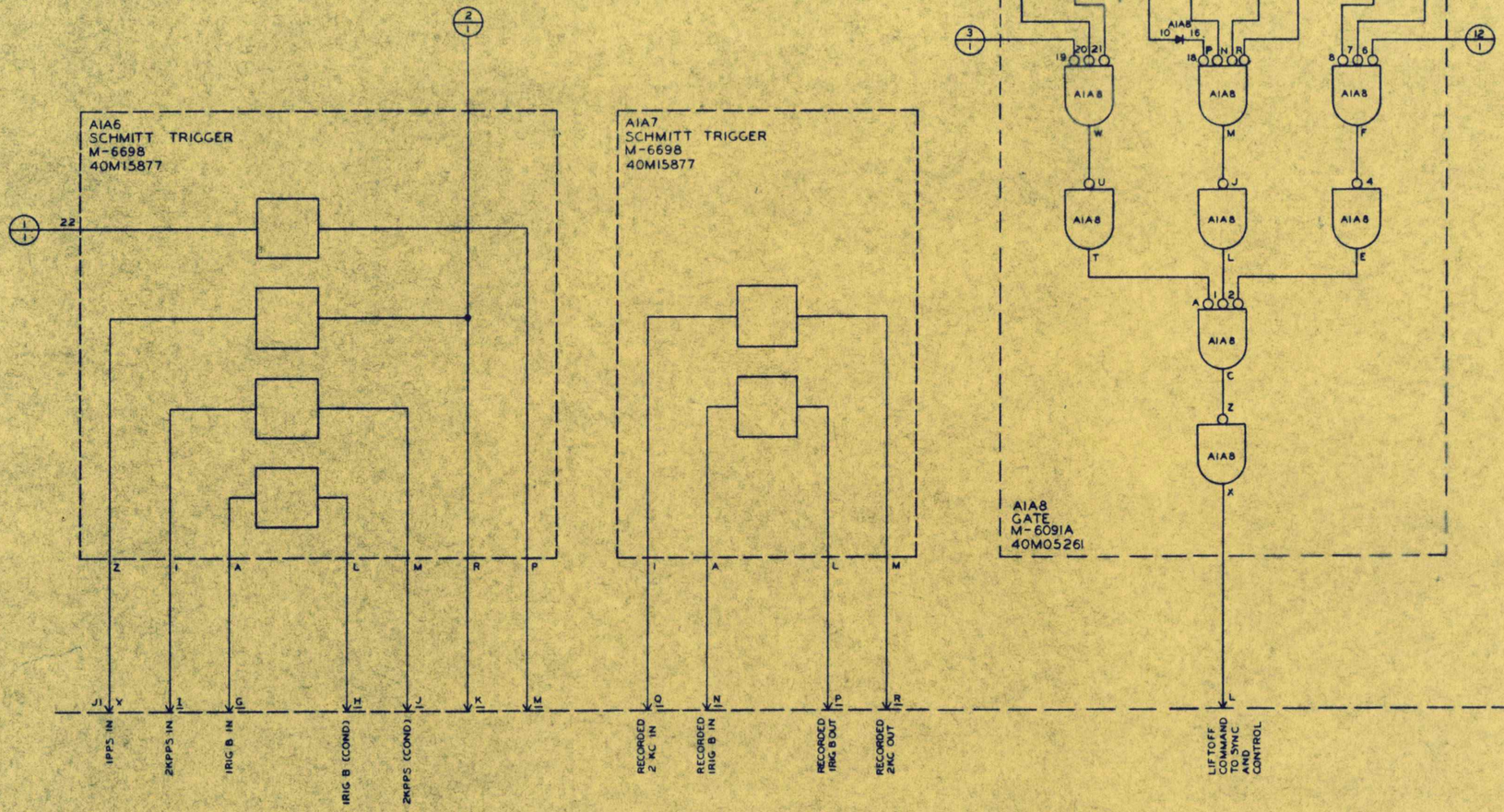
5P

Change Date
30 November, 1966

MSFC FORM 433-9 (AUGUST 1960)

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	BY	REVISIONS			
		ZONE	SYM	DESCRIPTION	DATE / APPROVAL
			G	SEE SHEET 1	5-19-67



40M08302 G

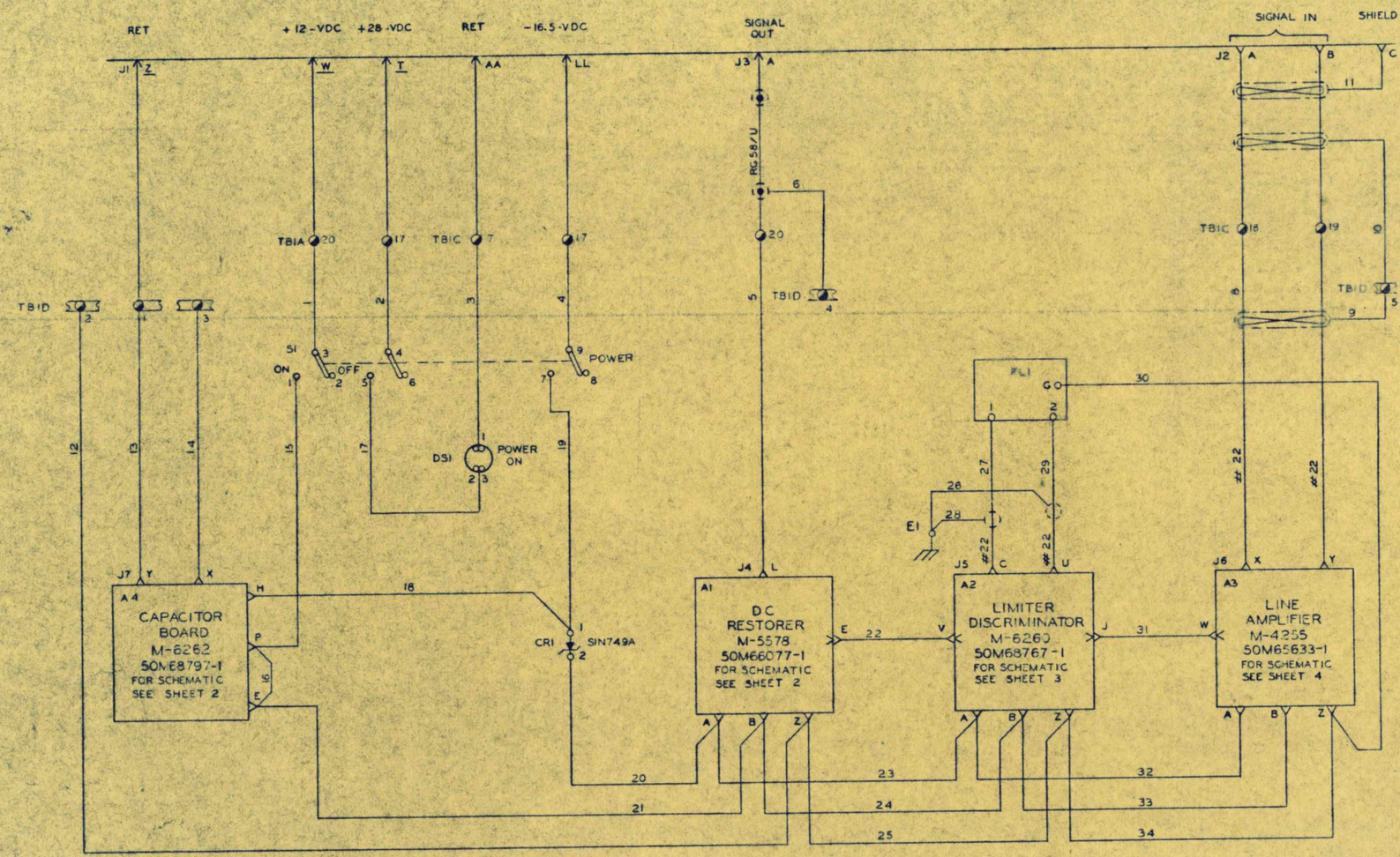
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING AUG 15, 1966	LOGIC DIAGRAM AUXILIARY FUNCTION COUNT CLOCK TYPE I	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
NEXT ASSY / USED ON	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED	SATURN V	SIZE D	40M08302
APPLICATION		DIRECTOR	WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT	SHEET 2 OF 2	

5P

Change Date
26 June 1967

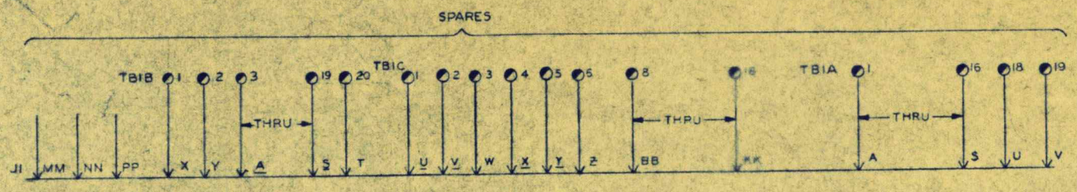
88 (AUGUST 1960)
PENDENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE SPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RE- BY PROCUREMENT OPERATION THE UNITED STATES GOVERN- DES NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; T THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR ED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA ARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER ERSON OR CORPORATION OR CONVEY- HTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	W.F.	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-38 & 5P-83	8,6,65	
		B	INC EO 5P-406	2-7-66	



NOTES:

1. WIRE IN ACCORDANCE WITH STANDARD DWG 40M00200.
2. ALL LAMPS TO BE GREEN.
3. ALL WIRE TO BE NO. 20 AWG UNLESS OTHERWISE SPECIFIED.
4. FOR ASSEMBLY SEE DWG 40M08321.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATIONS, PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
6. LAST WIRE NUMBER USED 34.



40M08309
B

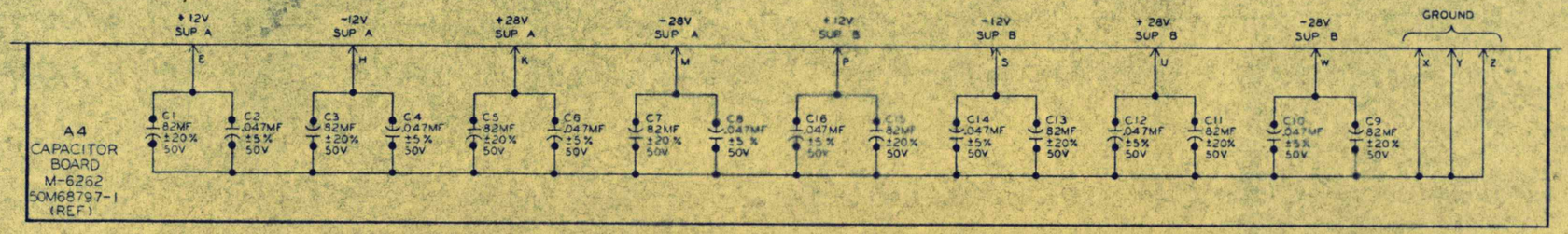
		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APR 3 '65	ADVANCED ELECTRICAL UNIT SCHEMATIC, LINE RECEIVER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKED ENGINEER		DWG SIZE D 40M08309
		MATERIAL	SUBMITTED APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE	SHEET 1 OF 4
NEXT ASSY	USED ON	HEAT TREATMENT		SCALE UNIT WEIGHT	
APPLICATION	SATURNSE	FINAL PROTECTIVE FINISH			

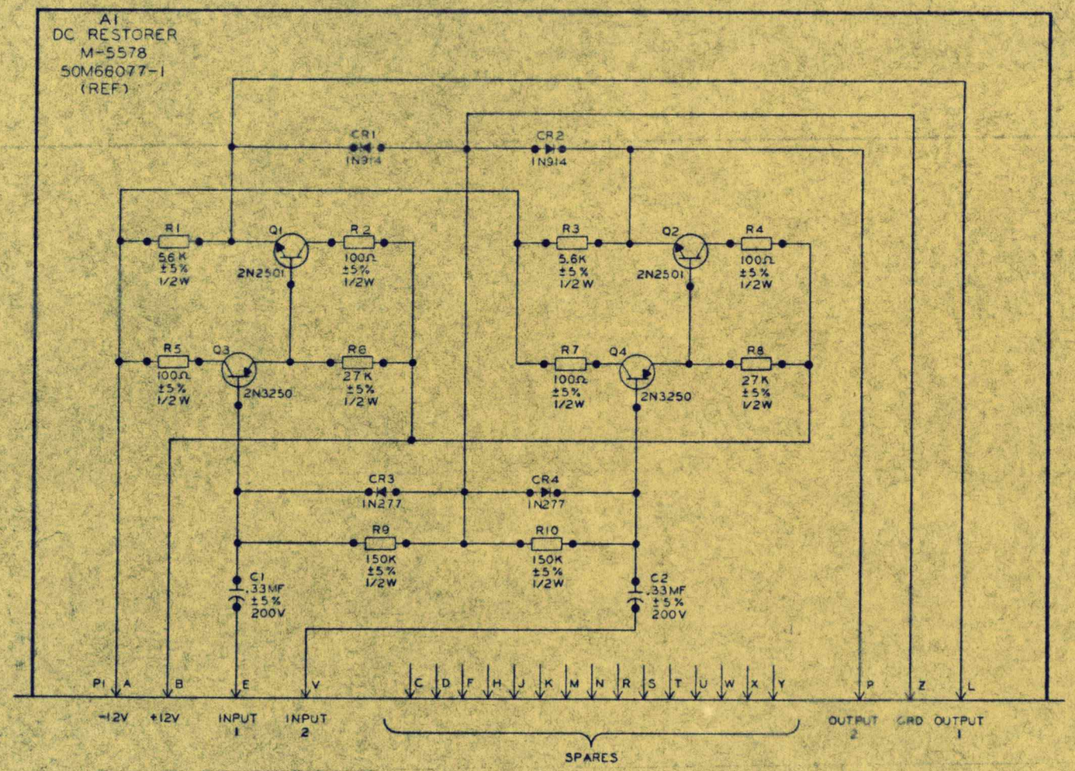
NIA
RC-11

COPYMATION, INC. 101-7

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS OR ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC 60 SP-38	8-6-65	





40M08309
A

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APR 28,65	ADVANCED ELECTRICAL UNIT SCHEMATIC, LINE RECEIVER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKED		NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
	SATURN GSE	MATERIAL	CHECKED STRESS		
NEXT ASSY	USED ON	HEAT TREATMENT	ENGINEER SUBMITTED		DWG SIZE D 40M08309
APPLICATION		FINAL PROTECTIVE FINISH	APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE / SCALE UNIT WEIGHT	SHEET 2 OF

COPYMATION, INC.

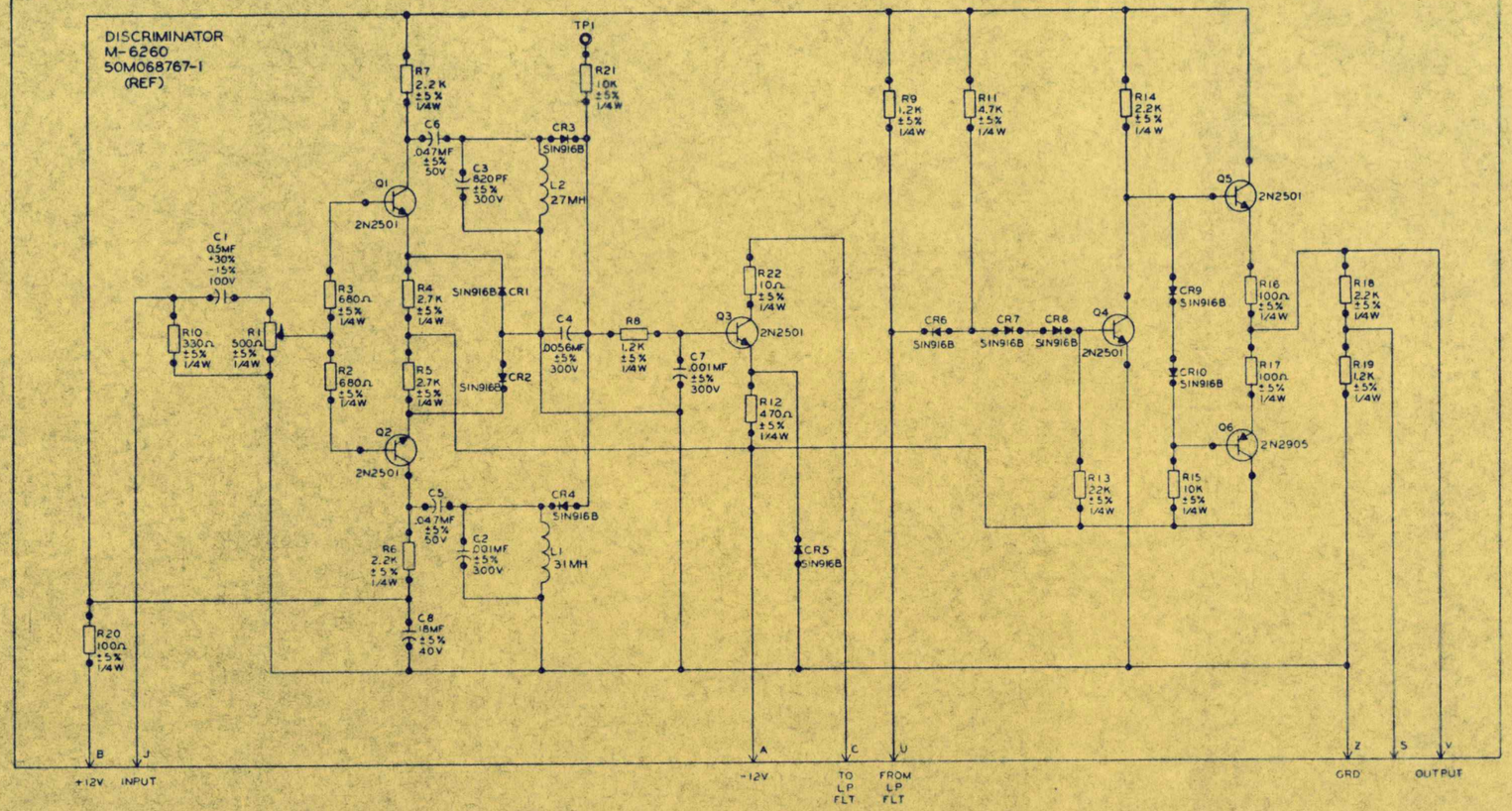
MSFC FORM 433 B (AUGUST 1966)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	SEE SHEET ONE	8/6/65	

A2

DISCRIMINATOR
M-6260
50M06876?-1
(REF)



40M08309
A

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APR 22,65	ADVANCED ELECTRICAL UNIT SCHEMATIC, LINE RECEIVER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKED STRESS SUBMITTED APPROVED DIRECTOR		NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
	SATURN GSE	MATERIAL		WEIGHT CHECKED DATE CODE	SIZE D 40M08309
NEXT ASSY	USED ON	HEAT TREATMENT		SCALE UNIT WEIGHT	SHEET 3 OF
APPLICATION		FINAL PROTECTIVE FINISH			

Issued 4/26/65 SP

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Change Date
30 November, 1966

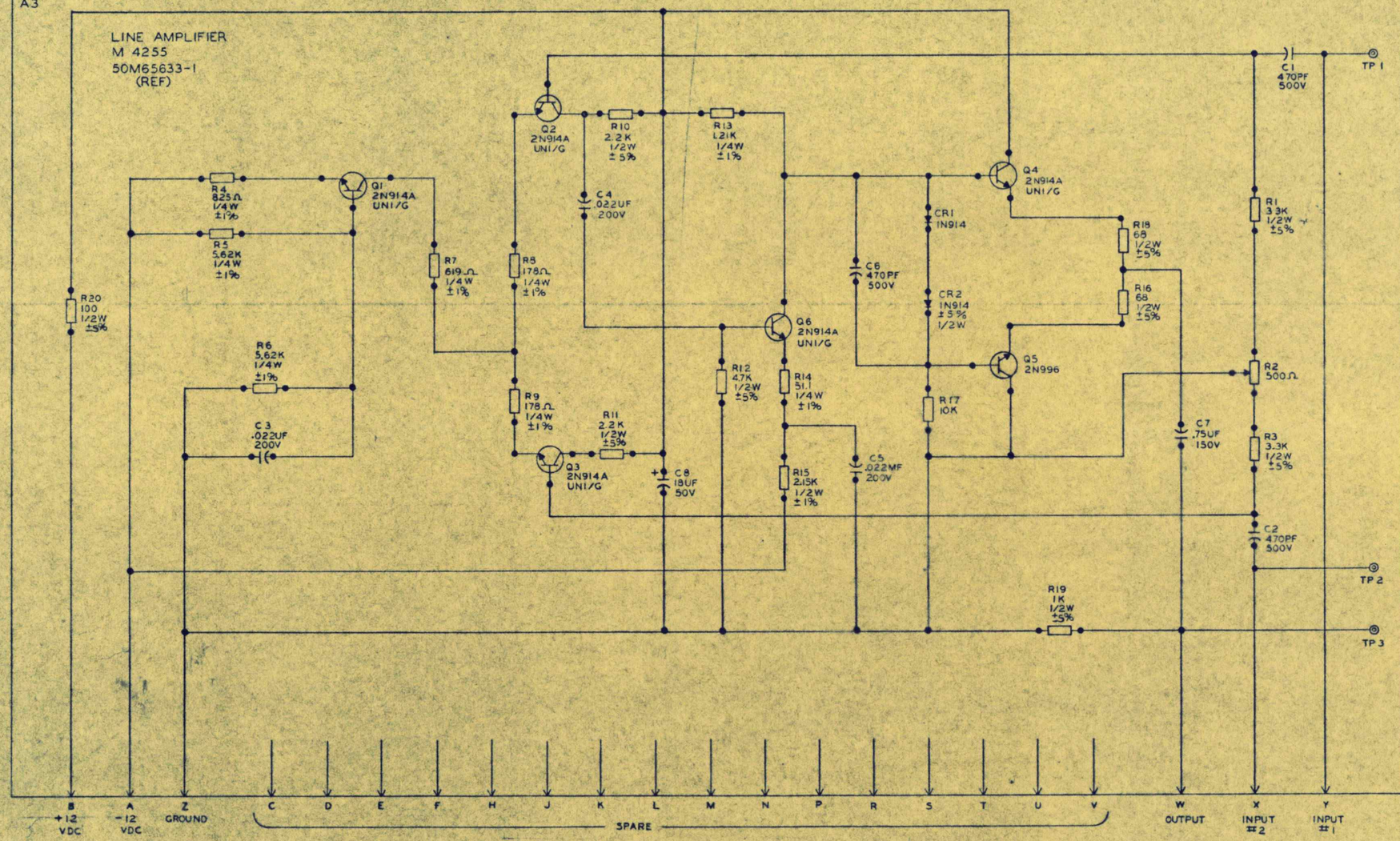
NASA FORM 422-3 (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 50-38	8-6-65	

A3

LINE AMPLIFIER
M 4255
50M65633-1
(REF)



40M08309
A

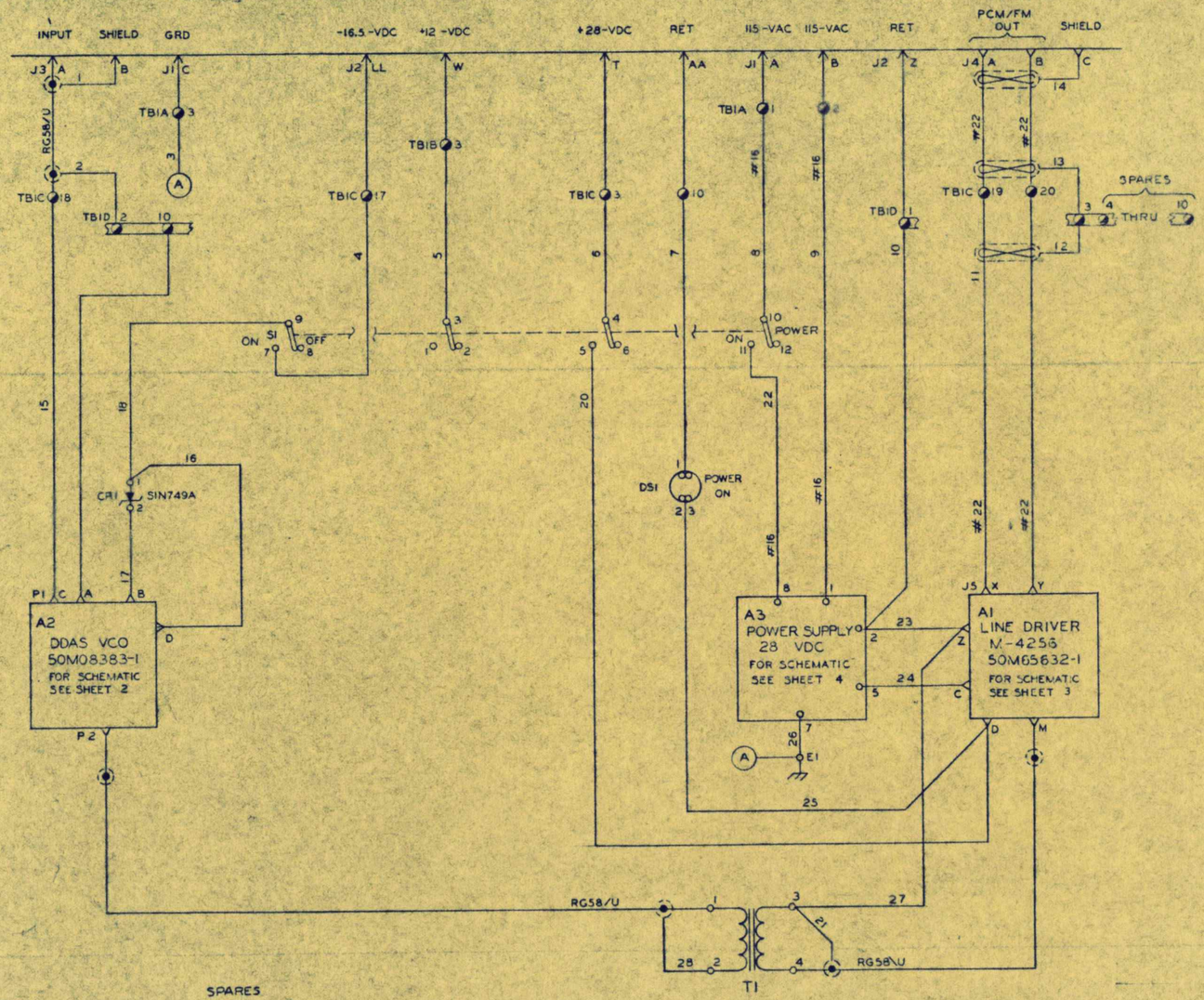
		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APRIL 24,65	ADVANCED ELECTRICAL UNIT SCHEMATIC, LINE RECEIVER, COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTING CHECKED ENGINEER SUBMITTED APPROVED DIRECTOR		NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
NEXT ASSY	USED ON	MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH		WEIGHT CHECKER DATE CODE SCALE UNIT WEIGHT	DWG SIZE D 40M08309 SHEET 4 OF 4
APPLICATION	SATURN SE				

Issued 5/24/65 JP

COPYMATION, INC. 101-7

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-75	2-9-66	
		B	INC EO 5P-363	2-9-66	
		C	INC EO 5P-430	2-9-66	
		D	INC EO 5P-495	2-9-66	
		E	INC EO 5P-523	2-9-66	
		F	INC EO 5P-548	2-9-66	



NOTES:

1. WIRE IN ACCORDANCE WITH STANDARD DWG 40M00200.
2. ALL LAMPS TO BE GREEN.
3. ALL WIRE TO BE NO. 20 AWG UNLESS OTHERWISE SPECIFIED.
4. FOR ASSEMBLY SEE DWG 40M08305.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATIONS, PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATIONS.
6. LAST WIRE NUMBER USED 28

40M08314
F

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING MAR 17,1965	ADVANCED ELECTRICAL UNIT SCHEMATIC VCO & LINE DRIVER COUNT CLOCK TYPE I SATURN V
NEXT ASSY: SATURN GSE; USED ON: APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED: DIRECTOR	WEIGHT CHECKER; SCALE; DATE; CODE; UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40M08314

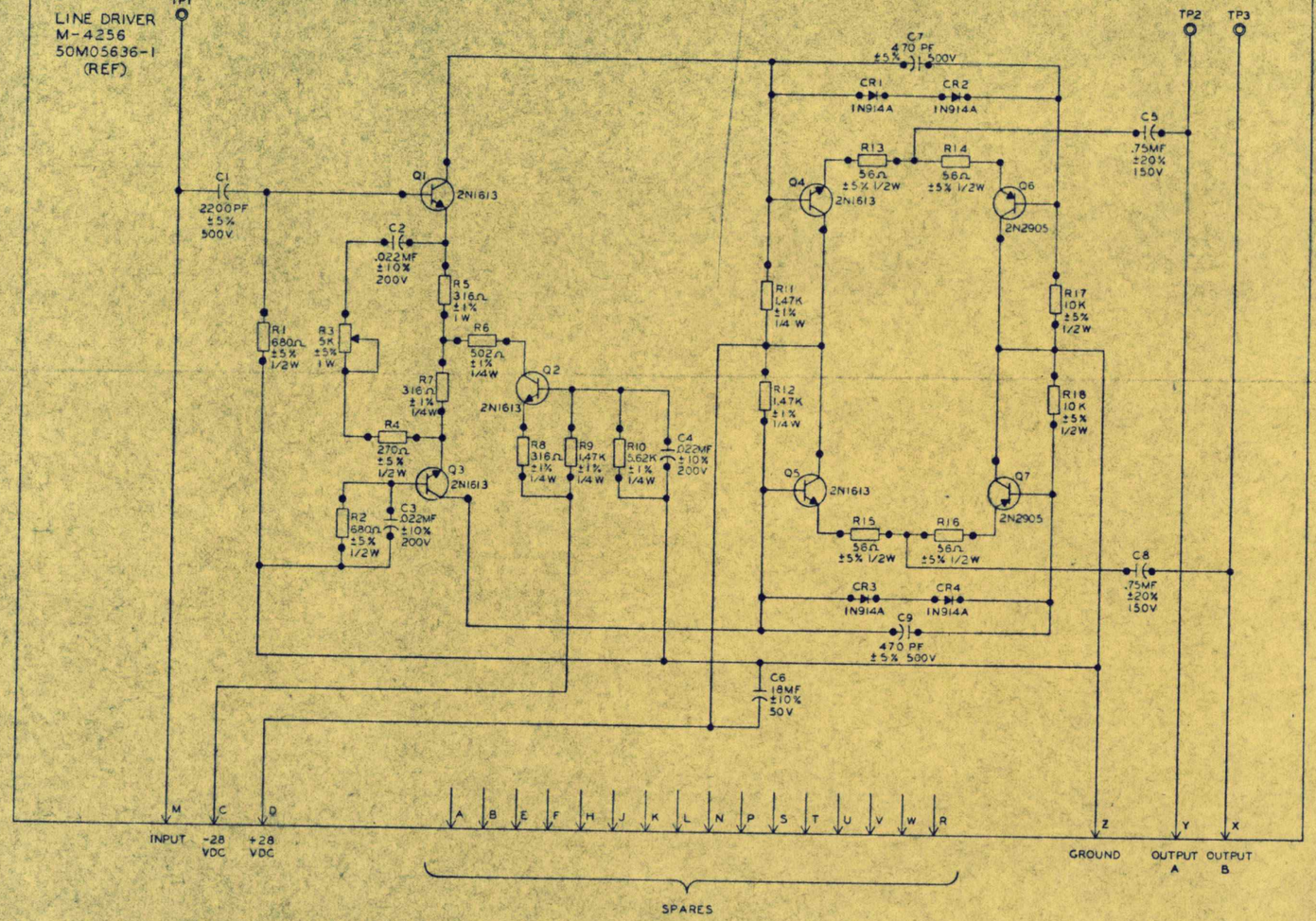
SHEET 1 OF 3

COPYMATION, INC. 101-7

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	W.F.	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-79	2-9-66	

A1
LINE DRIVER
M-4256
50M05636-1
(REF)



40M08314
A

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APR 23,65	ADVANCED ELECTRICAL UNIT SCHEMATIC, VCO & LINE DRIVER COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKER ENGINEER SUBMITTED APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE SCALE UNIT WEIGHT	DWG SIZE D 40M08314 SHEET 2 OF
NEXT ASSY APPLICATION	SATURN GSE USED ON	MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH			

COPYMATION, INC. NEW YORK

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED, BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
		A	INC EO SP-75	2-9-66	

A3

28-VDC
POWER SUPPLY
B X 28 N12
AC & DC ELEC

AC AC POS OUT NEG OUT POS SENS PROGRAM NEG SENS GROUND

8 1 2 5 3 6 4 7

1 2

6 7 5 4 3

CR6 CR5

C4 R16 CR10

R4 C8 CR9

R9 R10

R14 C5

R18 R15

C3

CR8 R1 R2 VOLTAGE R3 C7

Q2 Q1 R7

R11 R8 R6

Q7 Q4 Q3

Q6 R24 R20 C6 R13 R5

R21 Q8 R12

CR7 R22

R25

CR2 CR1 C1

CR3 CR4

40M08314

A

P51

ORIGINAL DATE OF DRAWING APR 5,1965

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS DECIMALS ANGLES
MATERIAL
HEAT TREATMENT
FINAL PROTECTIVE FINISH

SEE ENGINEERING RECORDS

NEXT ASSY SATURN GSE USED ON
APPLICATION

DRAFTSMAN Lisle
CHECKED
ENGR
SUBMITTED
APPROVED
DIRECTOR

ADVANCE ELECTRICAL
UNIT SCHEMATIC
VCO & LINE DRIVER
COUNT CLOCK TYPE I
SATURN V

WEIGHT CHECKER DATE CODE
SCALE UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

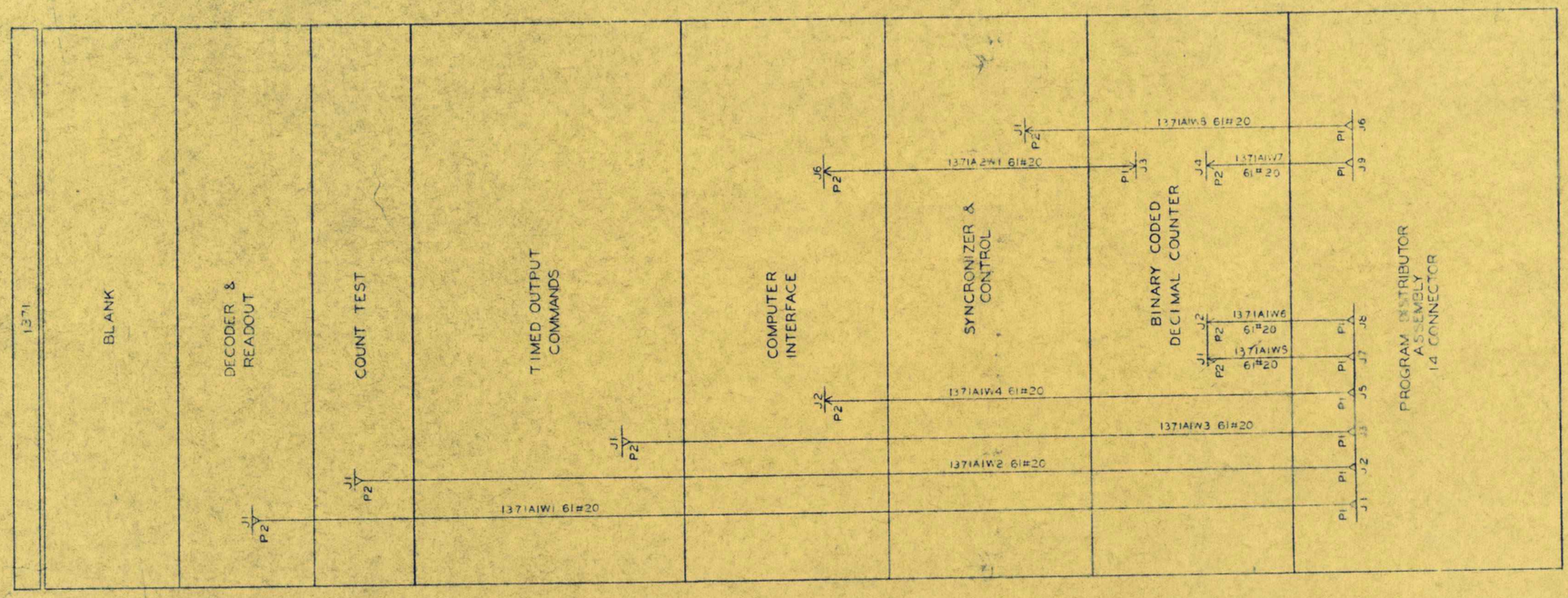
DWG SIZE D 40M08314
SHEET 3 OF 3

COPYMATION, INC. 101-7

NSFC FORM 422.5 (AUGUST 1960)

NOTICE WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT DOES NOT THEREBY INCUR ANY RESPONSIBILITY OR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	ING EO 5P-173	1-16-69	



NOTES:

1. PARTIAL REFERENCE DESIGNATION ARE SHOWN: FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION(S)
2. REF 40M08202 SHT FOR EQUIPMENT ALLOCATION
3. REF 40M08334 SHT FOR POWER INTERCONNECT.

40M08327
A

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APRIL 1,65	DIAGRAM INTERNAL CABLE CONNECTION COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKER		DWG SIZE D 40M08327
		MATERIAL	CHECKED STRESS		
		HEAT TREATMENT	SUBMITTED		
NEXT ASSY USED ON		FINAL PROTECTIVE FINISH	APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE	SHEET 1 OF 1
APPLICATION				SCALE UNIT WEIGHT	

COPYMATION, INC. 101-7

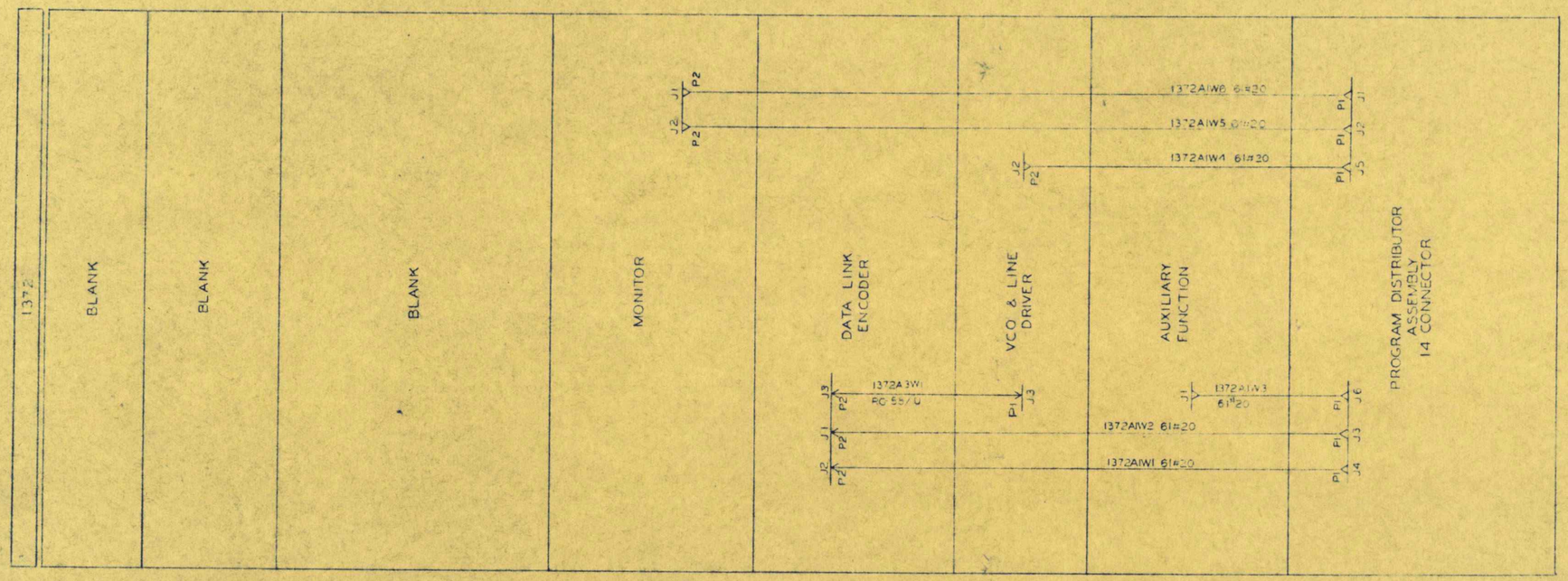
MSFC FORM 433-3 (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	N.P.	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	ING ED SP-191	2-65	

NOTES:

1. PARTIAL REFERENCE DESIGNATION ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION(S)
2. REF 40M08203 SHT FOR EQUIPMENT ALLOCATION
3. REF 40M08334 SHEET 2 FOR POWER INTERCONNECT



A5 A4 A3 A2 A1

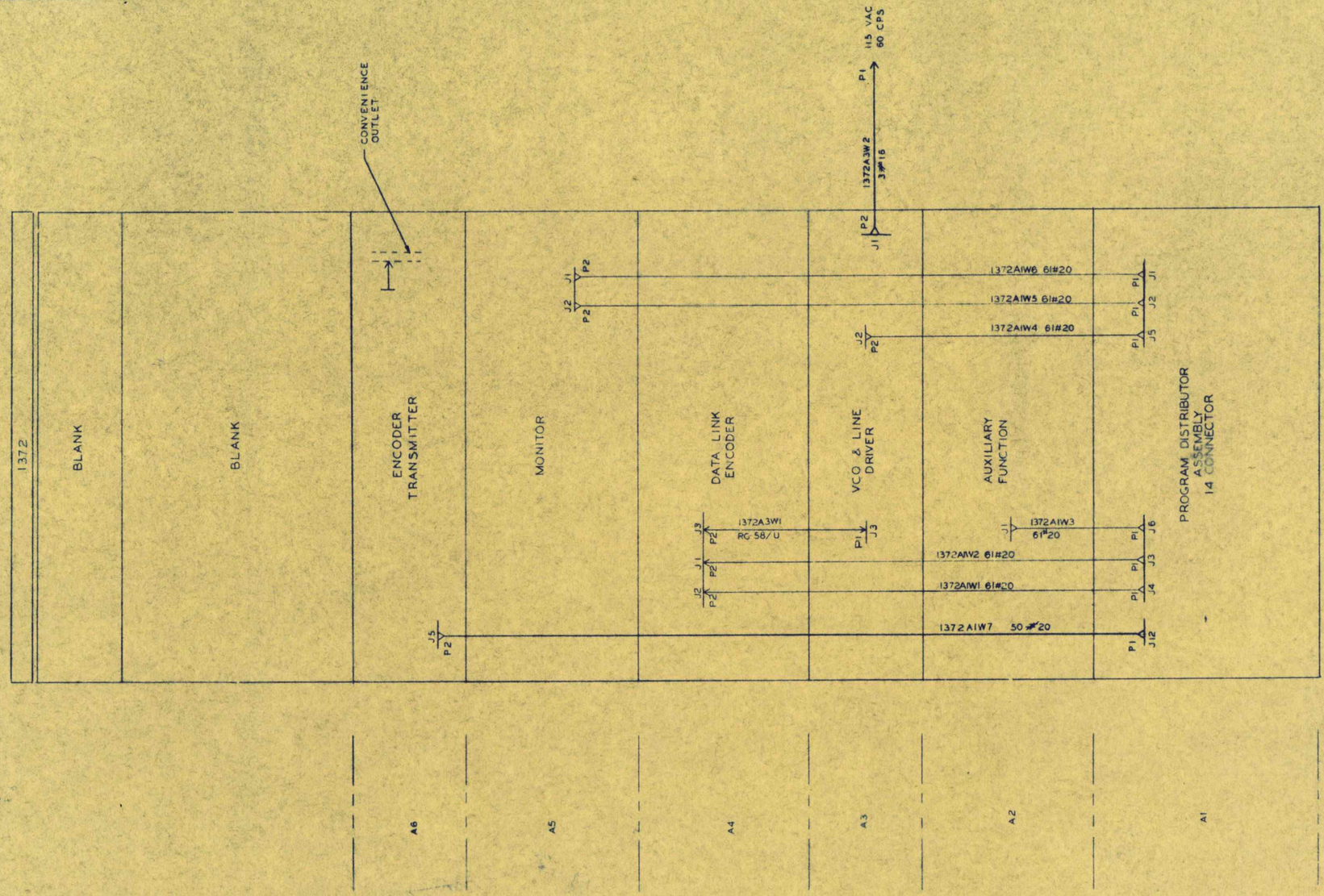
40M08328
A

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING	DIAGRAM INTERNAL CABLE CONNECTION COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ___ DECIMALS ___ ANGLES ___	CHECKED		DWG SIZE D — 40M08328
		MATERIAL	SUBMITTED	WEIGHT CHECKER / DATE / CODE	
NEXT ASSY	USED ON	HEAT TREATMENT	APPROVED	SCALE / UNIT WEIGHT	SHEET 1 OF 1
APPLICATION		FINAL PROTECTIVE FINISH	DIRECTOR		

COPYMATION, INC. 101-7

NOTICE—WHILE SUPERSEDENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT DOES NOT INCUR ANY RESPONSIBILITY WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OF ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
		A	INC ECO SP-[illegible]	3-21-65	[illegible]
		B	INC REV B PER ECO SP-265	5-18-65	[illegible]
		C	REV C - NOT USED	5-18-67	[illegible]
		D	INC REV D ECO SP-737	5-18-67	[illegible]
		E	INC REV E, ECO SP-744	5-18-67	[illegible]



NOTES:

1. PARTIAL REFERENCE DESIGNATION ARE SHOWN; FOR COMPLETE DESIGNATION PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION(S)
2. REF 40M08203 SHT 6 FOR EQUIPMENT ALLOCATION
3. REF 40MC8334 SHEET 2 FOR POWER INTERCONNECT
4. 40M08203-1 & 5 CONFIGURATION IS SHOWN, -3 CONFIGURATION DOES NOT UTILIZE PANEL A6 OR 1372A1W7 CABLE, INSTEAD A 7" BLANK PANEL IS INSERTED BETWEEN THE 5.25 AND 14" BLANK PANEL.

40M08328
E

SEE ENGINEERING RECORDS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS — DECIMALS — ANGLES
MATERIAL
HEAT TREATMENT
FINAL PROTECTIVE FINISH
NEXT ASSY — USED ON
APPLICATION

ORIGINAL DATE OF DRAWING APRIL 1 65
DRAWN [illegible] CHECKED [illegible]
TRACED [illegible] STRESS [illegible]
ENGINEER [illegible] QUALITY [illegible]
SUBMITTED [illegible]
APPROVED
DIRECTOR

DIAGRAM
INTERNAL CABLE CONNECTION
COUNT CLOCK TYPE I
SATURN V

WEIGHT CHECKER — DATE — CODE
SCALE — UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

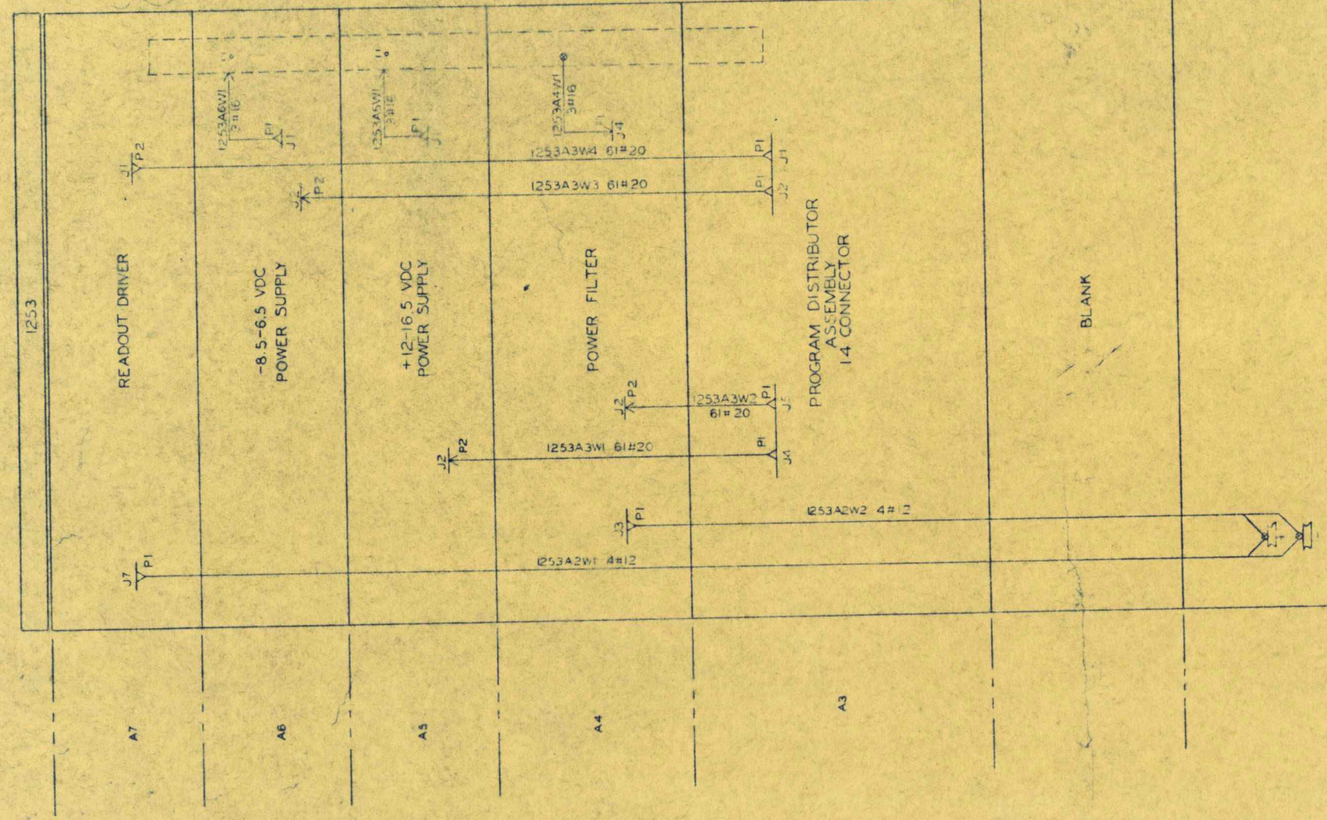
SIZE D — 40M08328
SHEET 1 OF 1

12-10-00-12
RSH
DISTR CODE

COPYMATION, INC. 201-7

Change Date
26 June 1967

PART NO.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC TO 40-37	11-8-65	



NOTES:

1. REPRESENTS BUS BAR ON DC FRAME TYPE II
2. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION.
3. REF 40M08204 SH FOR EQUIPMENT ALLOCATION.
4. REF 40M08334 SH2 FOR POWER INTERCONNECT

40M08329

A

SEE ENGINEERING RECORDS

NEXT ASSY | USED ON APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS | DECIMALS | ANGLES
MATERIAL
HEAT TREATMENT
FINAL PROTECTIVE FINISH

ORIGINAL DATE OF DRAWING APRIL 1, 65
DRAFTSMAN | CHECKED
DESIGN | ENGINEER
SUBMITTED
APPROVED
DIRECTOR

DIAGRAM
INTERNAL CABLE CONNECTION
COUNT CLOCK TYPE I
SATURN V

WEIGHT CHECKER | DATE | CODE
SCALE | UNIT WEIGHT

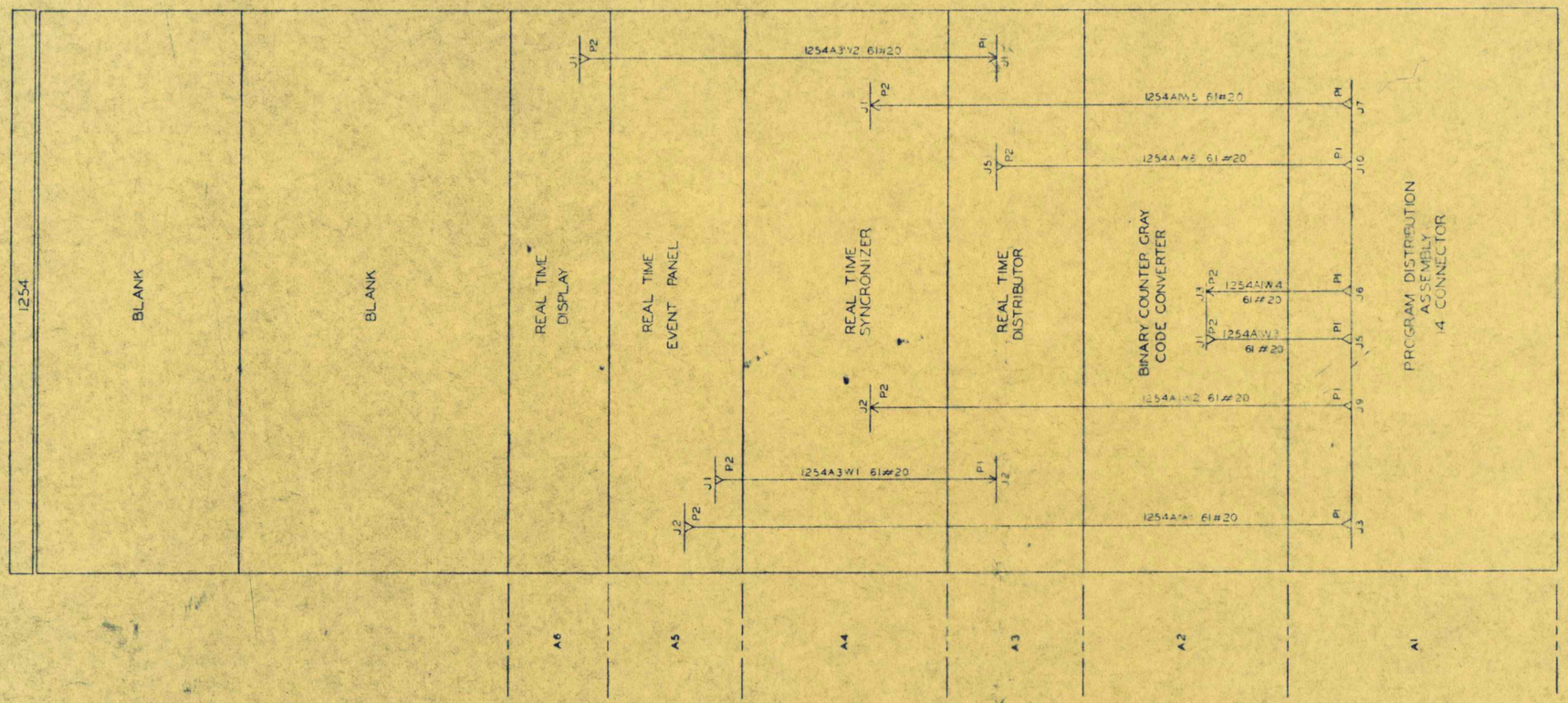
GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D | 40M08329

SHEET 1 OF 1

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



NOTES:

1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
2. REF 40M08335 SH 1 FOR EQUIPMENT ALLOCATION
3. REF 40M08334 SH 3 FOR POWER INTERCONNECT

40M08330

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APRIL 1965	DIAGRAM INTERNAL POWER CONNECTION COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AEROMAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKER STRESS LAYOUT SUBMITTED APPROVED		DWG SIZE D 40M08330
		MATERIAL		WEIGHT CHECKER DATE CODE	
		HEAT TREATMENT		SCALE UNIT WEIGHT	SHEET OF
NEXT ASSY	USED ON	FINAL PROTECTIVE FINISH			
APPLICATION			DIRECTOR		

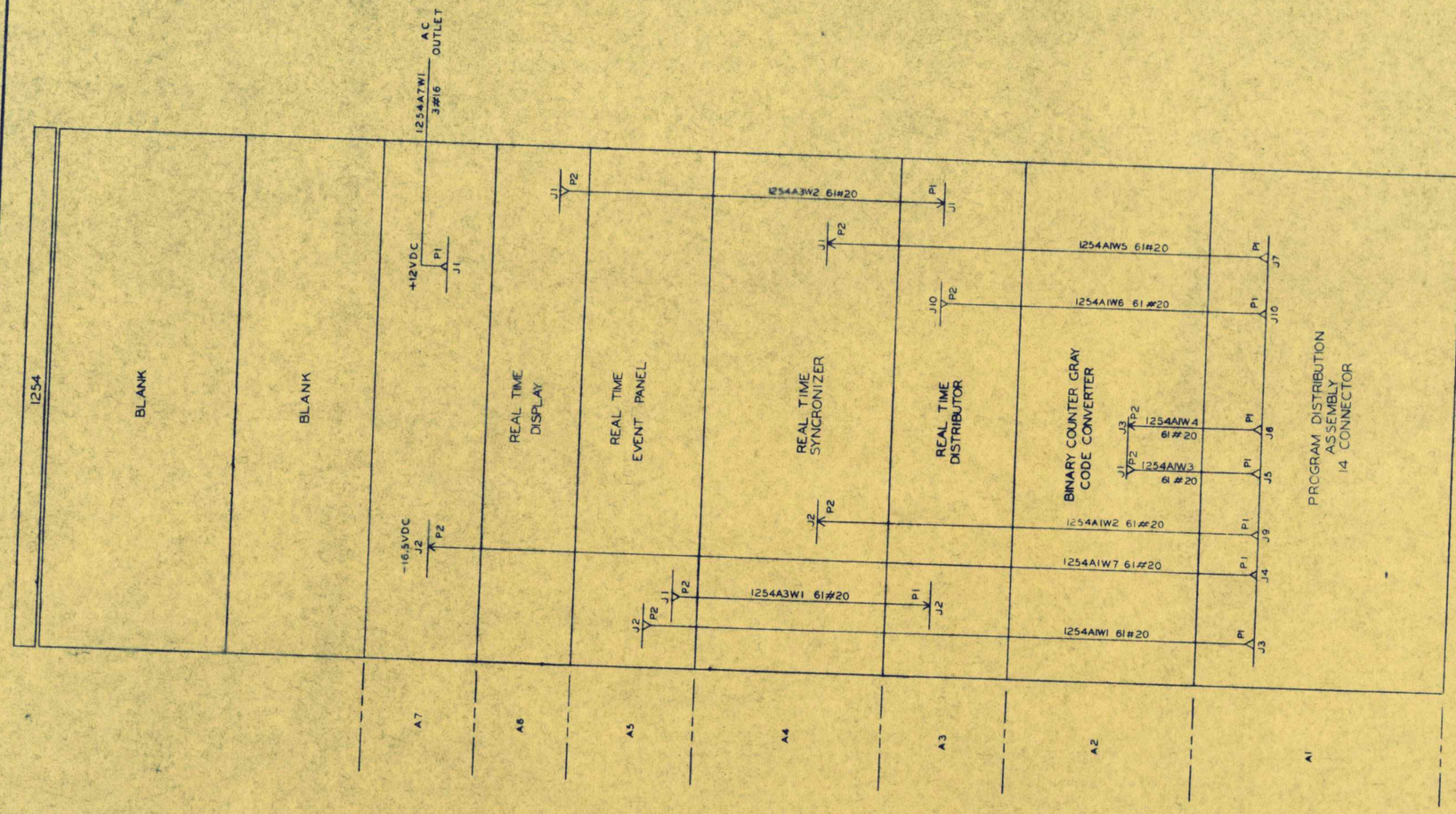
P-5N

COPYMATION, INC., 301-7

MSFC FORM 482-S (AUGUST 1966)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FURNISHED, FORWARDED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO SP-335	5-19-67	
		B	INC EO SP-420	5-19-67	



NOTES:

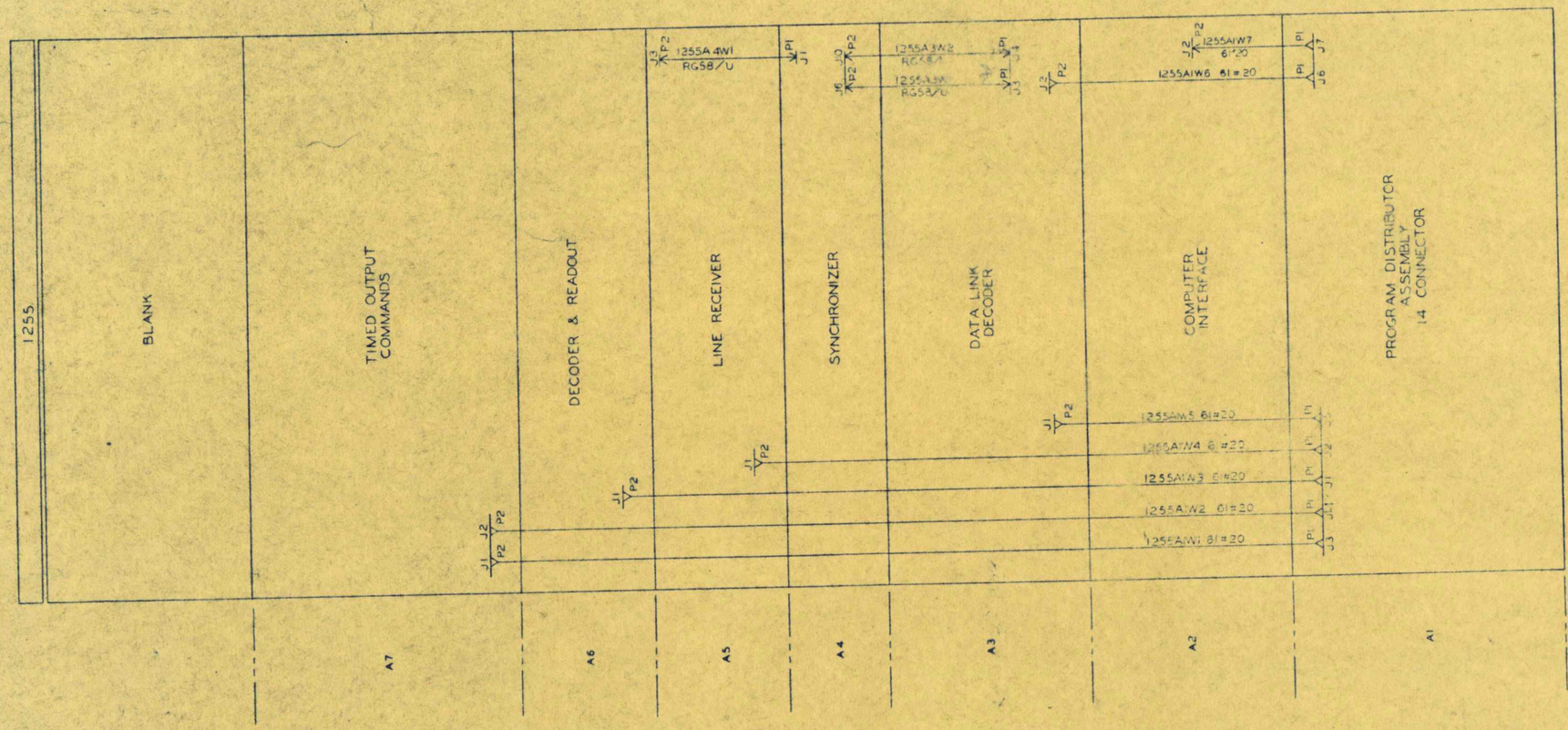
1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
2. REF 40M08205 SH 1 FOR EQUIPMENT ALLOCATION.
3. REF 40M08334 SH 3 FOR POWER INTERCONNECT.

40M08330 B

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING APRIL 1,65	DIAGRAM INTERNAL POWER CONNECTION COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	DRAFTSMAN; CHECKED; STRESS; SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKED; DATE; CODE; SCALE; UNIT WEIGHT	CAGE CODE D	40M08330
				SHEET 1 OF 1	

Change Date
26 June 1967

PART No.	#	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC 59 SP 94		



NOTES:

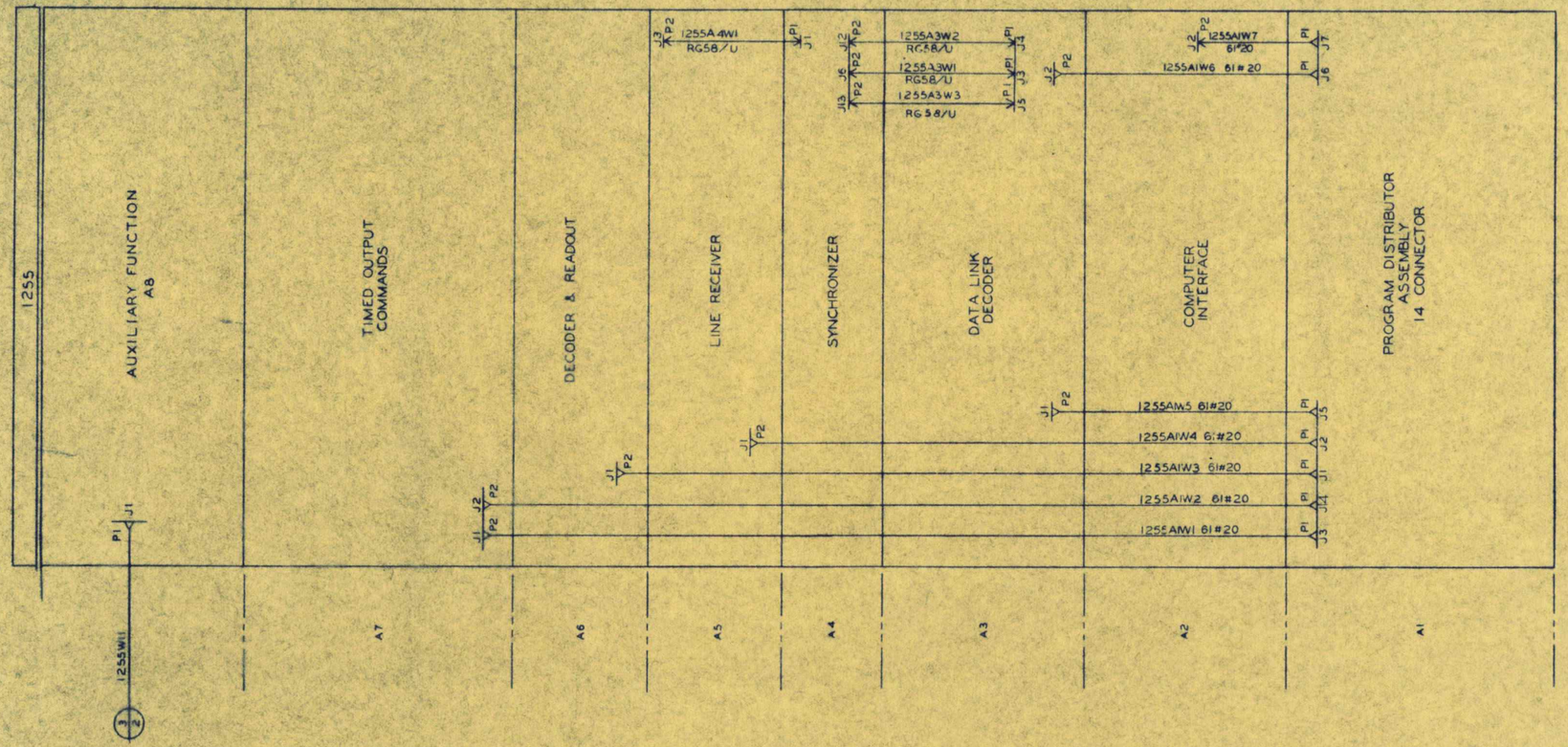
1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NUMBER AND ASSY DESIGNATION.
2. REF 40M08206 SH 1 FOR EQUIPMENT ALLOCATION.
3. REF 40M08333 SH 1 FOR POWER INTERCONNECT.

40M08331 A

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APR 1 1965	DIAGRAM INTERNAL CABLE CONNECTION COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKER ENGR SUBMITTED APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE SCALE UNIT WEIGHT	SIZE D 40M08331 SHEET 1 OF 1
NEXT ASSY	USED ON	MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH			
APPLICATION					

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	QTY	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
			A	INC EO 5P 98	9-6-65	
			B	INC EO 5P-412A	5-17-67	
			C	REV C CANCELLED	5-17-67	
			D	INC EO 5P-741	5-19-67	



NOTES:

1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION, PREFIX WITH UNIT. NUMBER AND ASSY DESIGNATION.
2. REF 40M08206 SH 1 & 2 FOR EQUIPMENT ALLOCATION.
3. REF 40M08333 SH 1 FOR POWER INTERCONNECT.

40M08331
D

V-72-15-00-12
RSN

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING APR 1965	DIAGRAM INTERNAL CABLE CONNECTION COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON / APPLICATION	DRAWN / TRACED / SUBMITTED / APPROVED / DIRECTOR	WEIGHT CHECKED / DATE / CODE; SCALE / UNIT WEIGHT	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA; SIZE D; 40M08331; SHEET 1 OF 1

Issued 5/19/67 SP

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Change Date
26 June 1967

NSFC FORM 422-S (AUGUST 1960)

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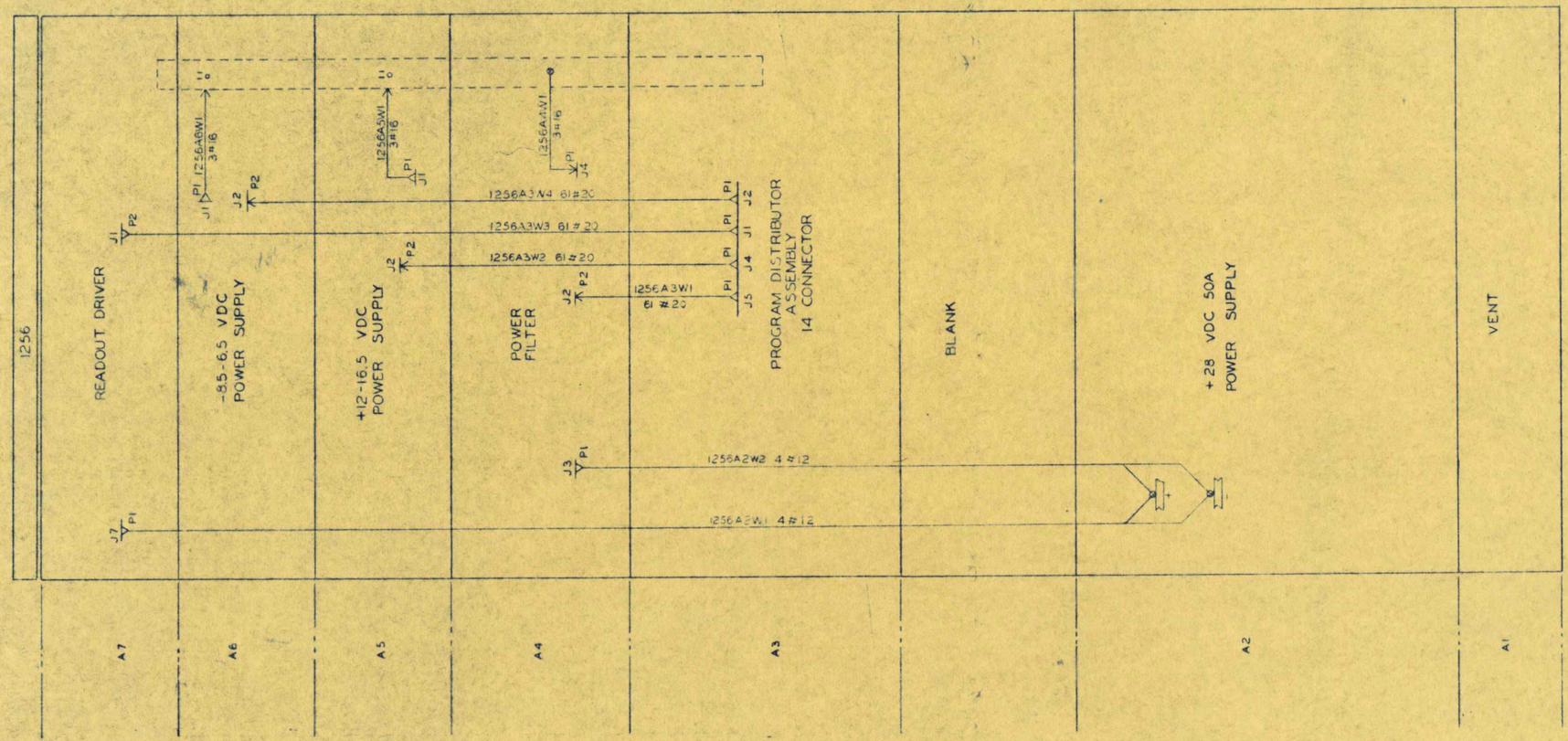
PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A			



NOTES:

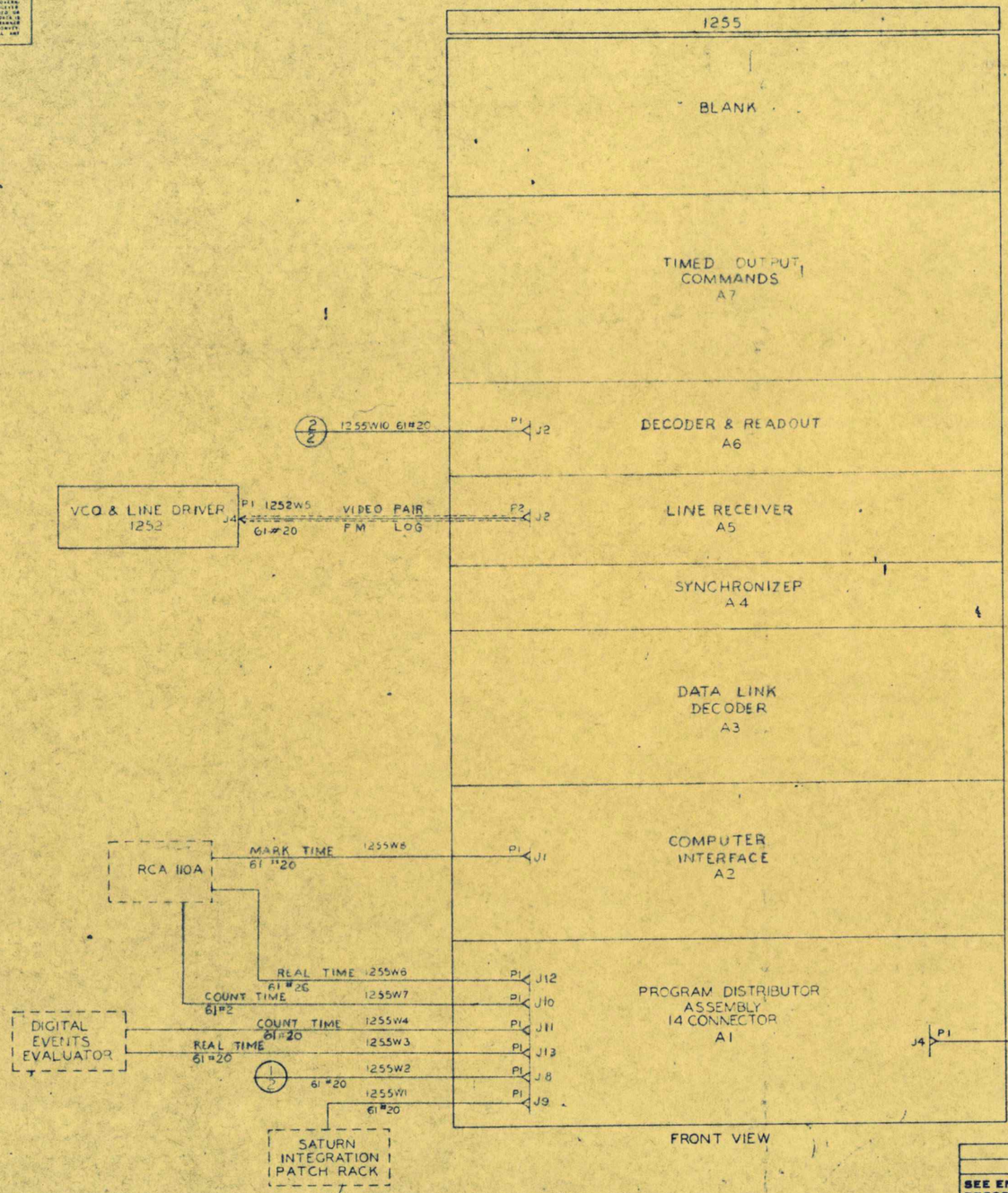
1. REPRESENTS BUS BAR ON DC FRAME TYPE II
2. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION.
3. REF 40M08261 SH 1 FOR EQUIPMENT ALLOCATION.
4. REF 40M08333 SH 2 FOR POWER INTERCONNECT.

40M08332 A

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APR. 1 64	DIAGRAM INTERNAL CABLE CONNECTION COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY	USED ON	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED	WEIGHT CHECKED / DATE / CODE; SCALE / UNIT WEIGHT	DWG SIZE D 40M08332; SHEET 1 OF 1
APPLICATION			DIRECTOR		

COPYMATION, INC. 101-7

PART NO	NO	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
			A	INC EO 5P-95	9-30-69	



NOTES:

1. LAST BUS BAR NUMBER USED 2.
2. REPRESENTS BUS BAR ON DC FRAME TYPE II.
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
4. REFERENCE 40M08331, SHEET 1, AND 40M08332, SHEET 1, FOR INTERNAL CABLE CONNECTIONS DIAGRAM.
5. REFERENCE 40M08206 AND 40M08251 FOR EQUIPMENT ALLOCATION DRAWINGS.

40M08333
A

SEE ENGINEERING RECORDS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS DECIMALS ANGLES
MATERIAL
HEAT TREATMENT
FINAL PROTECTIVE FINISH
NEXT ASSY USED ON
APPLICATION

ORIGINAL DATE OF DRAWING APRIL 1, 65
DRAFTSMAN CHECKER
CHECKED DESIGNER
SUBMITTED JOURNEYMAN
APPROVED
DIRECTOR

EFFECTIVE ON
DIAGRAM
POWER INTERCONNECT
COUNT CLOCK TYPE I
SATURN V

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

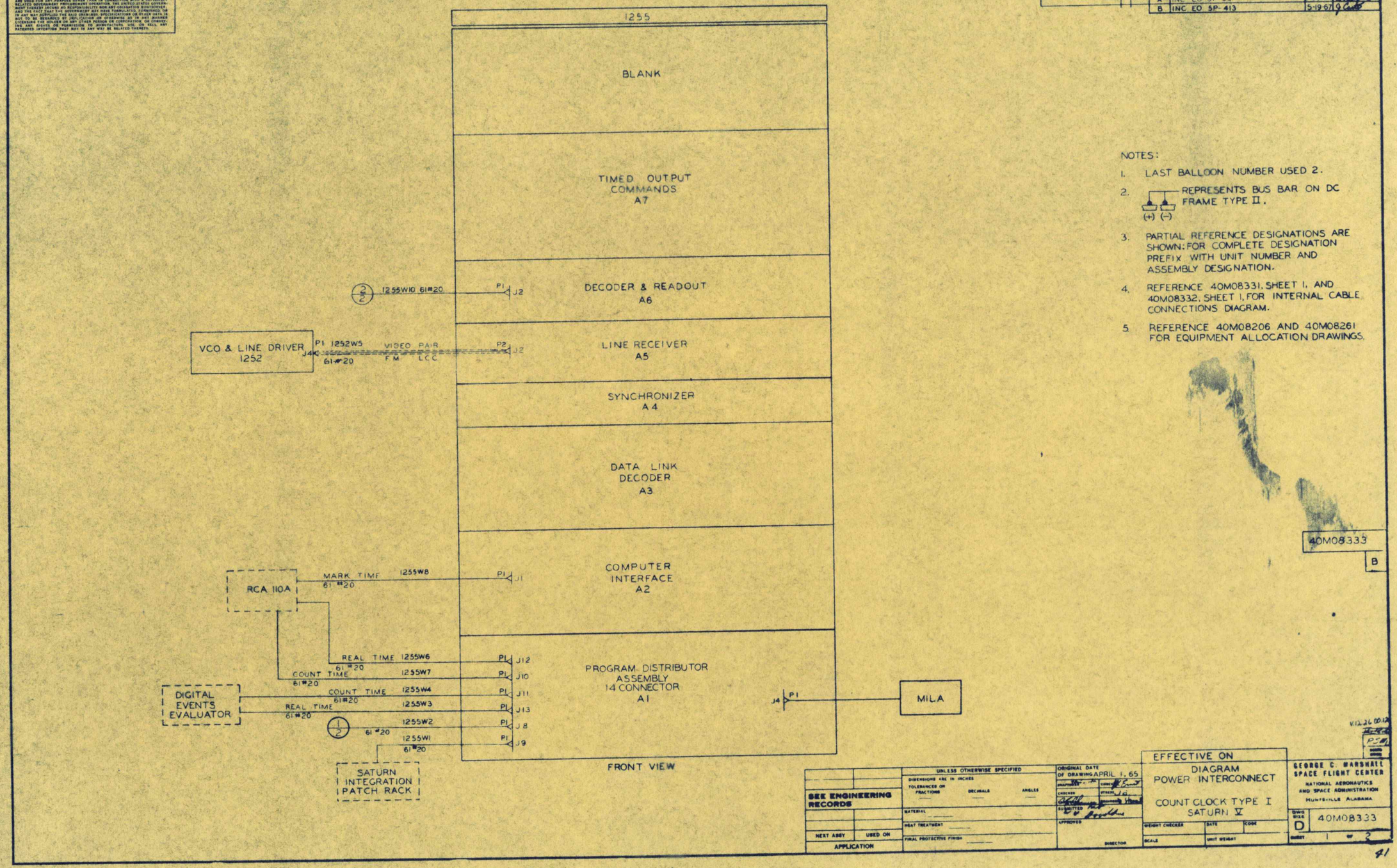
WEIGHT CHECKER DATE CODE
SCALE UNIT WEIGHT

DWG SIZE D 40M08333
SHEET 1 OF 2

MSFC FORM 482-B (AUGUST 1960)

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE, AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL, ANY PATENTED INVENTION THAT MAY, IN ANY WAY BE RELATED THERETO.

PART NO	QTY	ZONE	REVISIONS			
			STR	DESCRIPTION	DATE	APPROVAL
			A	INC. EO 5P-95	9-30-65	
			B	INC. EO 5P-413	5-19-67	



NOTES:

1. LAST BALLOON NUMBER USED 2.
2. REPRESENTS BUS BAR ON DC FRAME TYPE II. (+) (−)
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
4. REFERENCE 40M08331, SHEET 1, AND 40M08332, SHEET 1, FOR INTERNAL CABLE CONNECTIONS DIAGRAM.
5. REFERENCE 40M08206 AND 40M08261 FOR EQUIPMENT ALLOCATION DRAWINGS.

40M08333 B

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APRIL 1, 65	EFFECTIVE ON
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED / DIRECTOR	DIAGRAM POWER INTERCONNECT; COUNT CLOCK TYPE I SATURN V
			GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE ALABAMA
		WEIGHT CHECKER / DATE / COMP; SCALE / UNIT WEIGHT	SIZE D; 40M08333; SHEET 1 OF 2

Change Date
26 June 1967

2

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL

1256

READOUT DRIVER
A7

-8.5 -6.5 VDC
POWER SUPPLY
A6

+12 -6.5 VDC
POWER SUPPLY
A5

POWER
FILTER
A4

PROGRAM DISTRIBUTOR
ASSEMBLY
14 CONNECTOR
A3

BLANK

+28 VDC, 50A
POWER SUPPLY
A2

VENT
A1

FRONT VIEW

READOUT DRIVER — 61#20 1256W5 — P1 J6

READOUT DRIVER — 61#20 1256W5 — P1 J7

READOUT DRIVER

J1 P1 — 12#12 3#16 1256W2 — TO CONVENIENCE OUTLET

J8 P1 — 61#20 1256W4 — READOUT DRIVER

J9 P1 — 61#20 1256W3 — READOUT DRIVER

J10 P2 — 61#20 255W10 — (2/1)

J12 P2 — 61#20 255W3 — (1/1)

J2 P1 — 4#12 208V 3 Ø AC 1256W1 — FACILITY POWER BREAKER

-28 V P — 1/0 2 V RETURN 1256W7 — RCA 110A

40M08333

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS — DECIMALS — ANGLES —	ORIGINAL DATE OF DRAWING APRIL 1965
NEXT ASSY	USED ON	MATERIAL — HEAT TREATMENT — FINAL PROTECTIVE FINISH —	APPROVED — DIRECTOR
APPLICATION			

DIAGRAM
POWER INTERCONNECT
COUNT CLOCK TYPE I
SATURN V

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

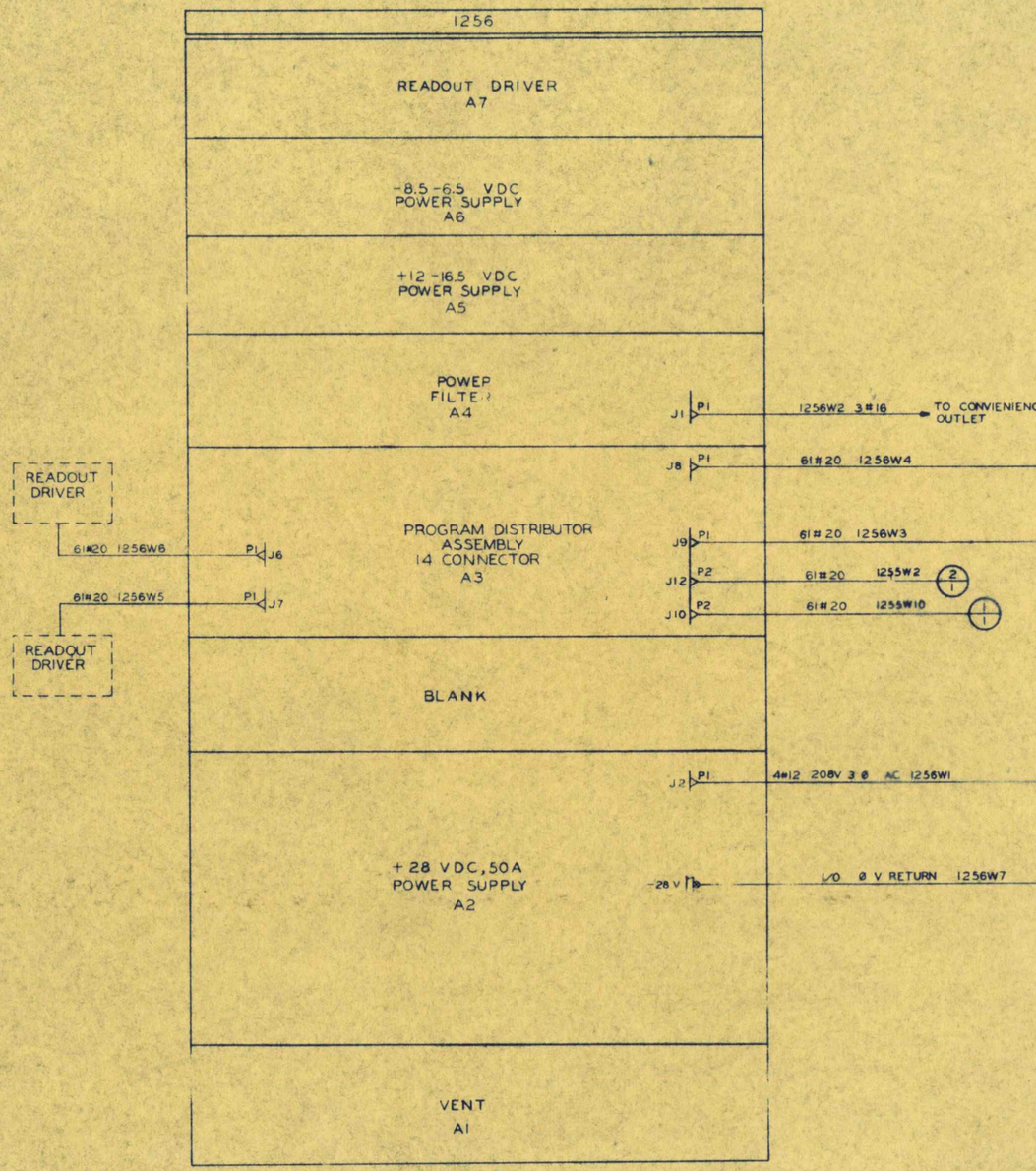
DWG SIZE D — 40M08333

WEIGHT CHECKED — DATE — CODE — SCALE — UNIT WEIGHT — SHEET 2 OF 2

ERC PSN DATA CODE

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	QTY	REVISIONS			
		LTR	STR	DESCRIPTION	DATE	APPROVAL
			B	SEE SHEET 1	5-16-67	


1256
READOUT DRIVER A7
-8.5 -6.5 VDC POWER SUPPLY A6
+12 -16.5 VDC POWER SUPPLY A5
POWER FILTER A4
PROGRAM DISTRIBUTOR ASSEMBLY 14 CONNECTOR A3
BLANK
+28 VDC, 50A POWER SUPPLY A2
VENT A1
FRONT VIEW
J1 P1 1256W2 3#16 TO CONVIENIENCE OUTLET
J8 P1 61#20 1256W4 READOUT DRIVER
J9 P1 61#20 1256W3 READOUT DRIVER
J12 P2 61#20 1255W2
J10 P2 61#20 1255W10
J2 P1 4#12 208V 3 Ø AC 1256W1 FACILITY POWER BREAKER
+28 V 1/0 Ø V RETURN 1256W7 RCA 110A
READOUT DRIVER
61#20 1256W6 P1 J6
61#20 1256W5 P1 J7
READOUT DRIVER
READOUT DRIVER

40M08333 B

	UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APRIL 1, 65	DIAGRAM POWER INTERCONNECT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE ALABAMA
SEE ENGINEERING RECORDS	DIMENSIONS ARE IN INCHES			SIZE D 40M08333
NEXT ASSY / USED ON	MATERIAL			SHEET 2 OF 2
APPLICATION	HEAT TREATMENT			
	FINAL PROTECTIVE FINISH			

Change Date
26 June 1967

3

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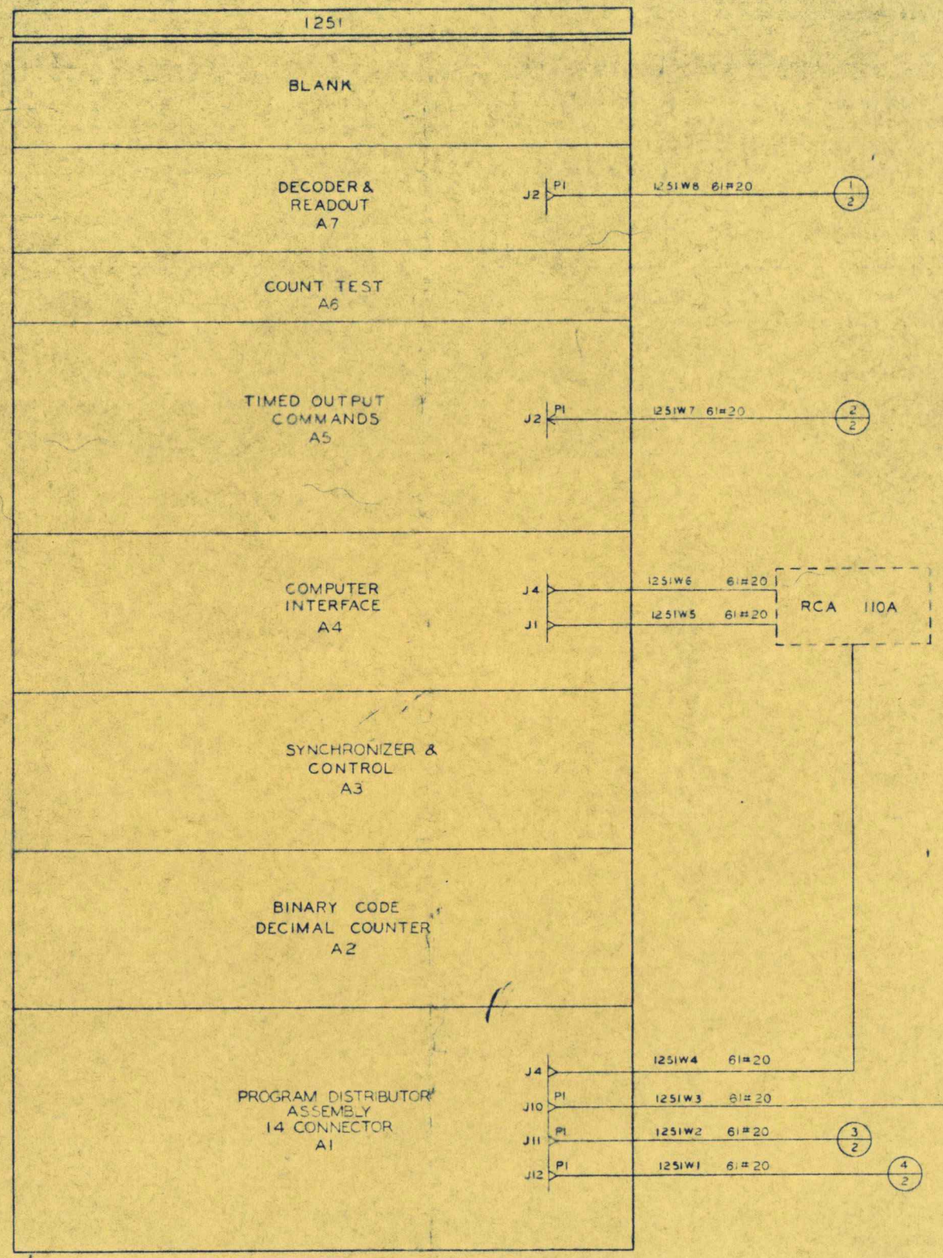
PART NO.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC ED SP-93	8/25/65	



NOTES:

1. LAST BALLOON NO. USED 6 .
2. REPRESENTS BUS BAR ON DC FRAME TYPE II.
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATIONS
4. REF FOR INTERNAL CABLE CONNECTION
   SHEET 1 - 40M08327
   SHEET 2 40M08328 & 40M08329
   SHEET 3 40M08330
5. REF FOR EQUIPMENT ALLOCATION DWG
   SHEET 1 40M08202
   SHEET 2 40M08203 & 40M08204
   SHEET 3 40M08205.

40M08334 A

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APR 1, 1965	DIAGRAM POWER INTERCONNECT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKED		DWG SIZE D 40M08334
		MATERIAL	ENGINEER SUBMITTED		
NEXT ASSY	USED ON	HEAT TREATMENT	APPROVED		
APPLICATION		FINAL PROTECTIVE FINISH	DIRECTOR	WEIGHT CHECKED DATE CODE	SHEET 1 OF 3
				SCALE UNIT WEIGHT	

COPYMATION, INC. 161-7

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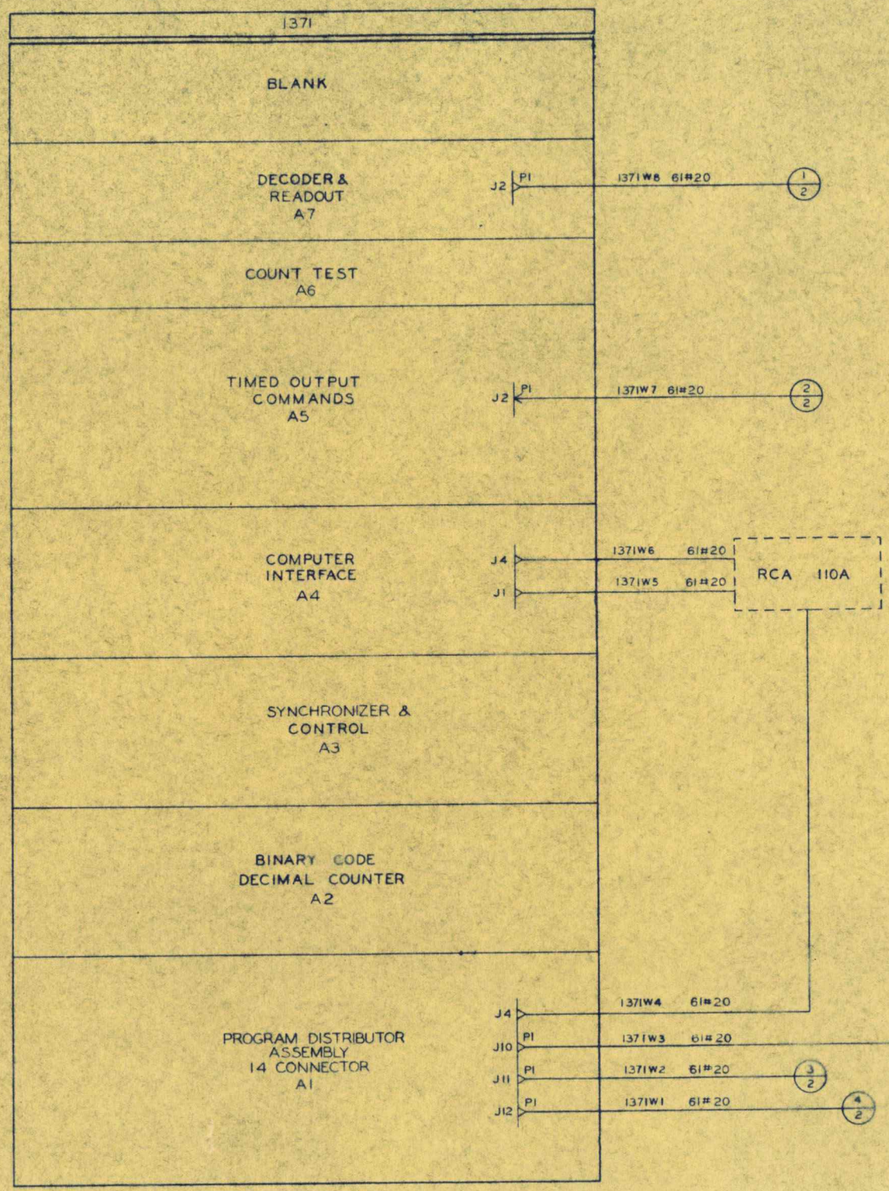
PART NO.	MF	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-93	5-23-67	
		B	INC EO 5P-187	5-23-67	
		C	INC EO 5P-266	5-23-67	
		D	INC EO 5P-365	5-23-67	
		E	INC EO 5P-532	5-23-67	
		F	REV F NOT USED	5-23-67	
		G	INC EO 5P-739	5-23-67	
		H	INC EO 5P-745	5-23-67	



FRONT VIEW

NOTES:

1. LAST BALLOON NO. USED 7
2. REPRESENTS BUS BAR ON DC FRAME TYPE II. (+) (−)
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATIONS
4. REF FOR INTERNAL CABLE CONNECTION
   SHEET 1 - 40M08327
   SHEET 2 40M08328 & 40M08329
   SHEET 3 40M08330
5. REF FOR EQUIPMENT ALLOCATION DWG
   SHEET 1 40M08202
   SHEET 2 40M08203 & 40M08204
   SHEET 3 40M08205
6. 40M08203 1372-1 & -5 CONFIGURATION IS SHOWN. THE -3 CONFIGURATION DOES NOT UTILIZE PANEL A6 OR CABLE GOING TO THE DATA PHONE, INSTEAD A 7" BLANK PANEL IS INSERTED BETWEEN THE 5.25" AND THE 14" BLANK PANELS.

40M08334 H

V12.2600.12

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING APR 1, 1965	DIAGRAM POWER INTERCONNECT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED; DIRECTOR	WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT	SIZE D; 40M08334; SHEET 1 OF 3

GOVTMATION, INC. 101-7

Change Date
26 June 1967

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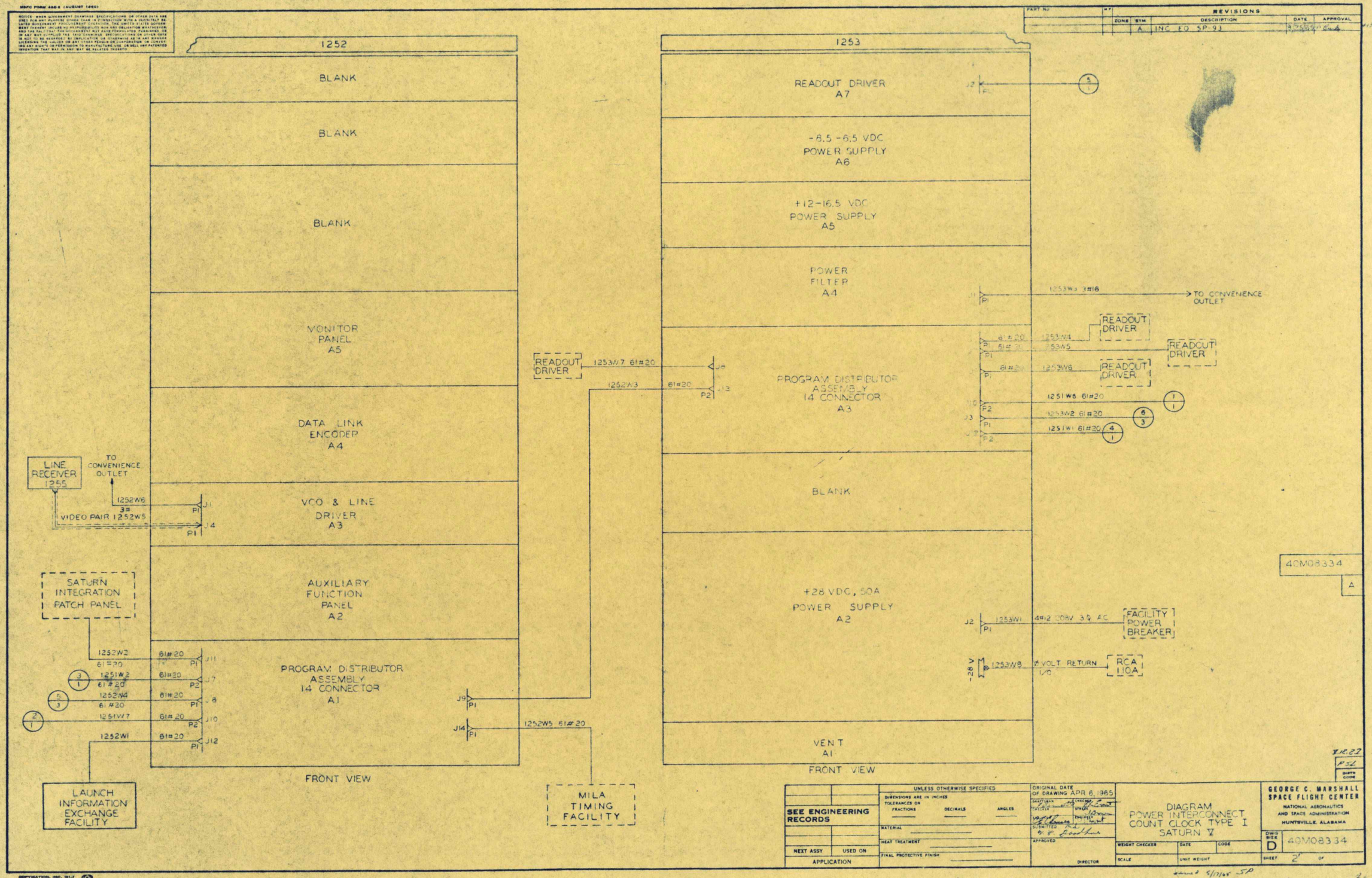
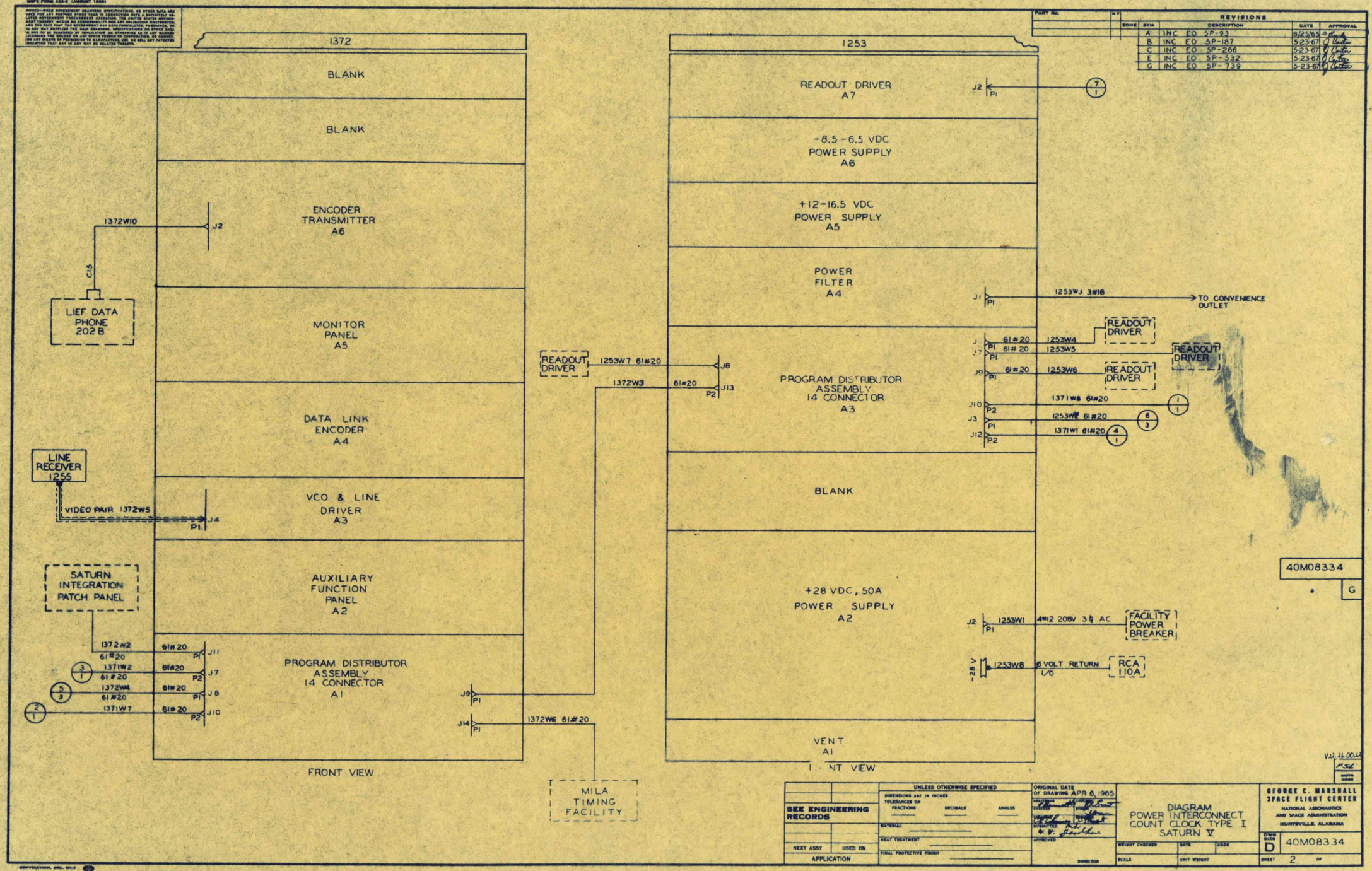
PART NO	"F"	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO SP-93		



		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING APR 6 1965	DIAGRAM POWER INTERCONNECT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAWN CHECKED ENGR APPR. SUBMITTED APPROVED DIRECTOR		DWG SIZE D 40M08334 SHEET 2 OF
NEXT ASSY	USED ON	MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH		WEIGHT CHECKER DATE CODE SCALE UNIT WEIGHT	
APPLICATION					

40M08334 A

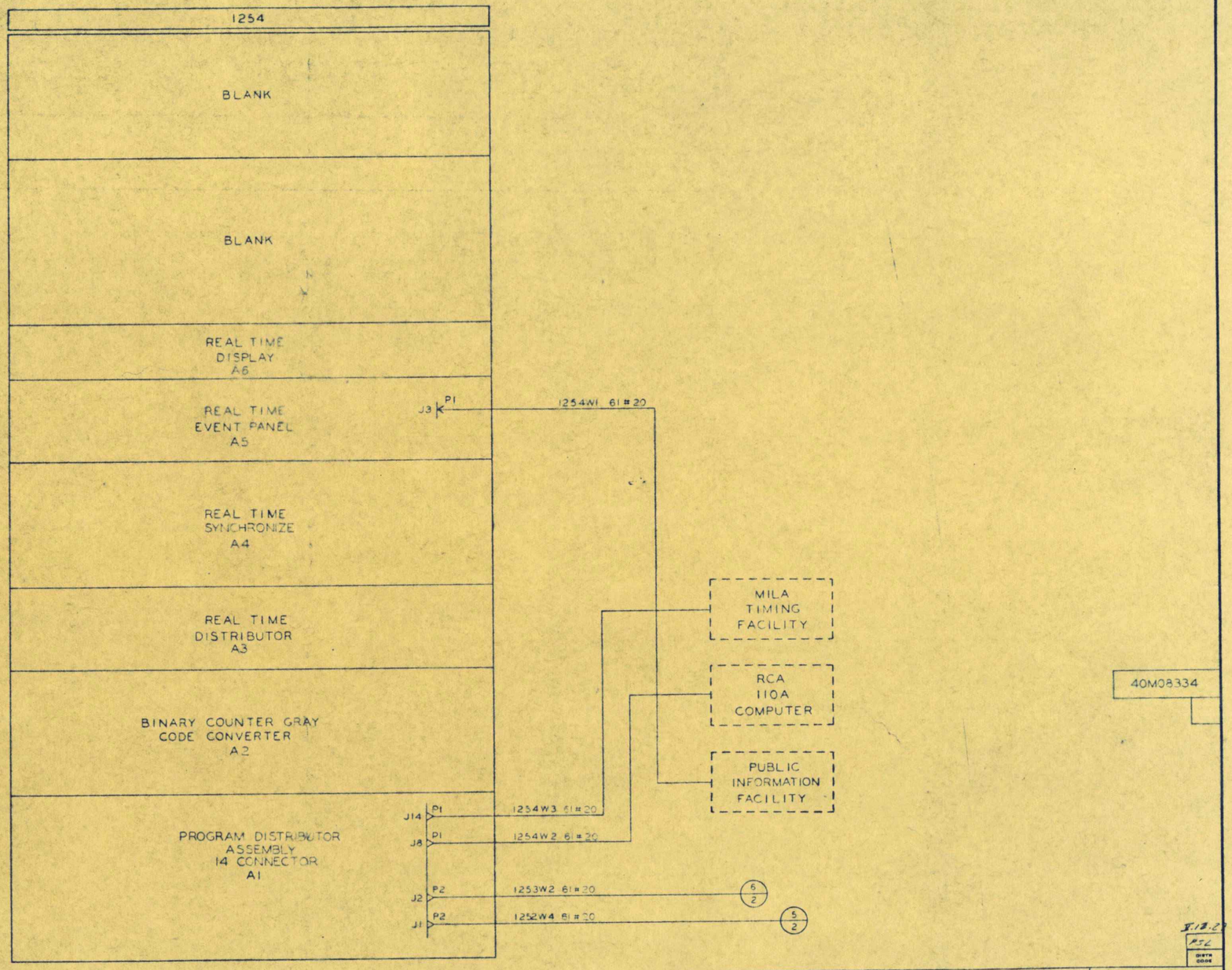


Change Date
26 June 1967

NSFC FORM 413-2 (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT FURNISHES NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	#	REVISIONS				
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL

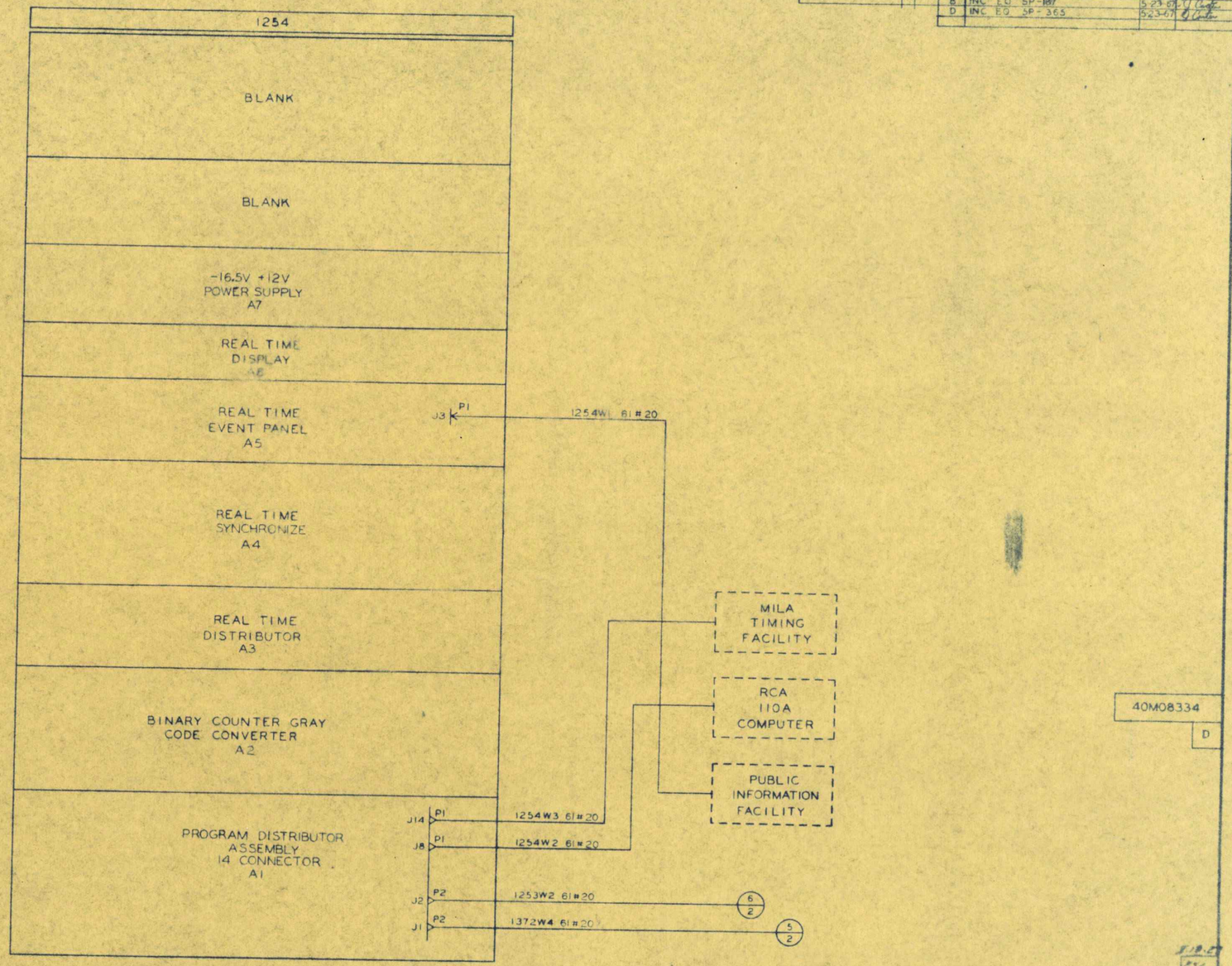


SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING APR 1,65 DRAFTSMAN / CHECKER / CHECKER / SUBMITTED / APPROVED / DIRECTOR	DIAGRAM POWER INTERCONNECT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
NEXT ASSY	USED ON	MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH		WEIGHT CHECKER / DATE / CODE SCALE / UNIT WEIGHT	DWG SIZE D — 40M08334 SHEET 3 OF 3
APPLICATION					

COPYMATION, INC. 101-7

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FURNISHED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY BE IN ANY WAY BE RELATED THERETO.

PART NO.	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
		B	INC EO SP-187	5-23-67	
		D	INC EO SP-365	5-23-67	



40M08334
D

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING APR 1,65	DIAGRAM POWER INTERCONNECT COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON / APPLICATION		DRAFTSMAN / DESIGNED / SUBMITTED / APPROVED / DIRECTOR	WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

SIZE D — 40M08334 — SHEET 3 OF 3

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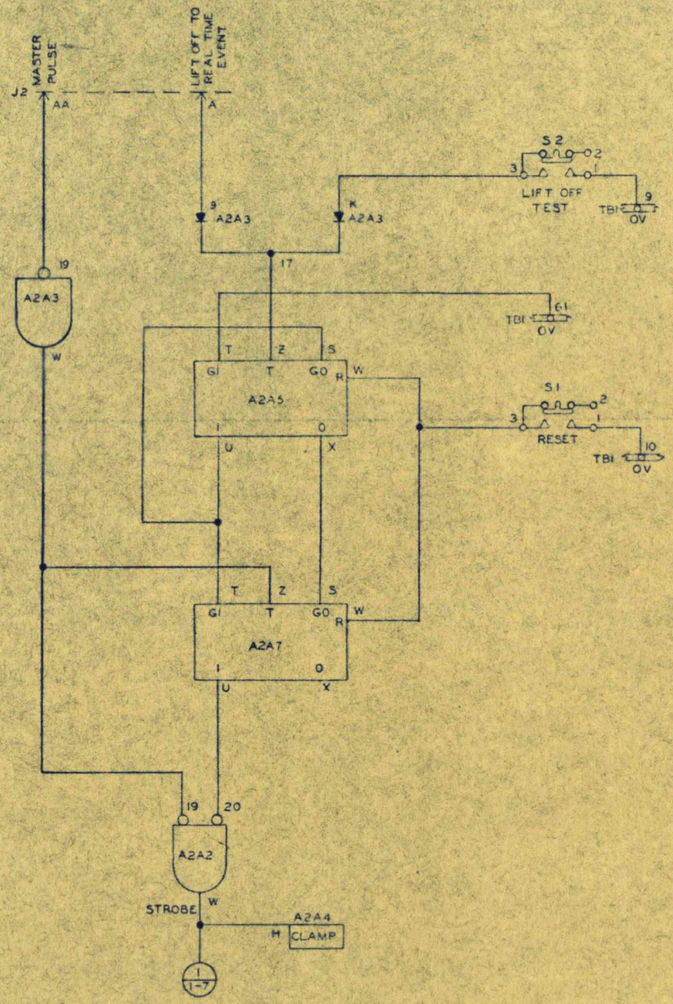
Change Date
26 June 1967

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-170	9-1-65	
		B	EO 5P-236 CANCELLED	2-7-66	
		C	INC EO 5P-441	2-7-66	



PC BOARD AND RECEPTACLE LAYOUT

A1 ANO	A1 PC BOARD	A1 KEY	A2 ANO	A2 PC BOARD	A2 KEY
			A20	M2231	
			A19	M2231	
			A18	M4689	
			A17	M5728A	
			A16	↕	
			A15		
			A14	M5728A	
			A13	M5729	
			A12	M5729	
			A11	M6054	
A10	M2231		A10	M2231	
A9	M2231		A9	M2231	
A8	M4689		A8	M4689	
A7	M5728A		A7	M5728A	
A6	↕		A6	↕	
A5			A5		
A4	M5728A		A4	M5728A	
A3	M5729		A3	M5729	
A2	M5729		A2	M5729	
A1	M6054		A1	M6054	

NOTES:

1. LAST BALLOON NO. USED 1
2. REFERENCE DRAWING WIRING LIST 40M08350
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION.
4. REFERENCE DRAWING ASSEMBLY 40M08217.

40M08351
C

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAY 1, 65	LOGIC DIAGRAM REAL TIME EVENT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ___ DECIMALS ___ ANGLES ___	DRAWN ___ CHECKED ___ STRESS ___ ENGINEER ___ APPROVED ___ DIRECTOR		SIZE D DWG 40M08351
NEXT ASSY	USED ON	MATERIAL ___ HEAT TREATMENT ___ FINAL PROTECTIVE FINISH ___		WEIGHT CHECKED ___ DATE ___ CODE ___ SCALE ___ UNIT WEIGHT ___	SHEET OF 7
APPLICATION					

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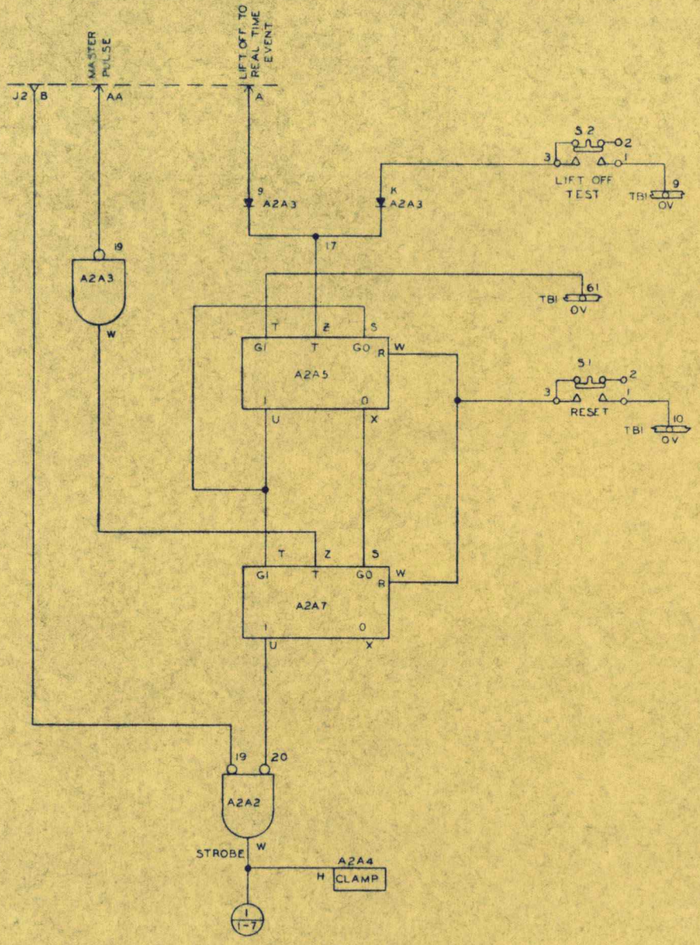
PART NO.	M F	REVISIONS			
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL



PC BOARD AND RECEPTACLE LAYOUT

A1 NO	A1 PC BOARD	A1 KEY	A2 NO	A2 PC BOARD	A2 KEY
			A20	M2231	
			A19	M2231	
			A18	M4689	
			A17	M5728A	
			A16	↕	
			A15		
			A14	M5728A	
			A13	M5729	
			A12	M5729	
			A11	M6054	
A10	M2231		A10	M2231	
A9	M2231		A9	M2231	
A8	M4689		A8	M4689	
A7	M5728A		A7	M5728A	
A6	↕		A6	↕	
A5			A5		
A4	M5728A		A4	M5728A	
A3	M5729		A3	M5729	
A2	M5729		A2	M5729	
A1	M6054		A1	M6054	

NOTES:

1. LAST BALLOON NO. USED 1.
2. REFERENCE DRAWING WIRING LIST: 40M18343.
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION, PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION.
4. REFERENCE DRAWING ASSEMBLY 40M08217-3.

40M18342

P5R

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING AUG 27, 1966	LOGIC DIAGRAM REAL TIME EVENT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY	USED ON		SUBMITTED		SIZE D
APPLICATION			APPROVED DIRECTOR	WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT	SHEET 1 OF 7

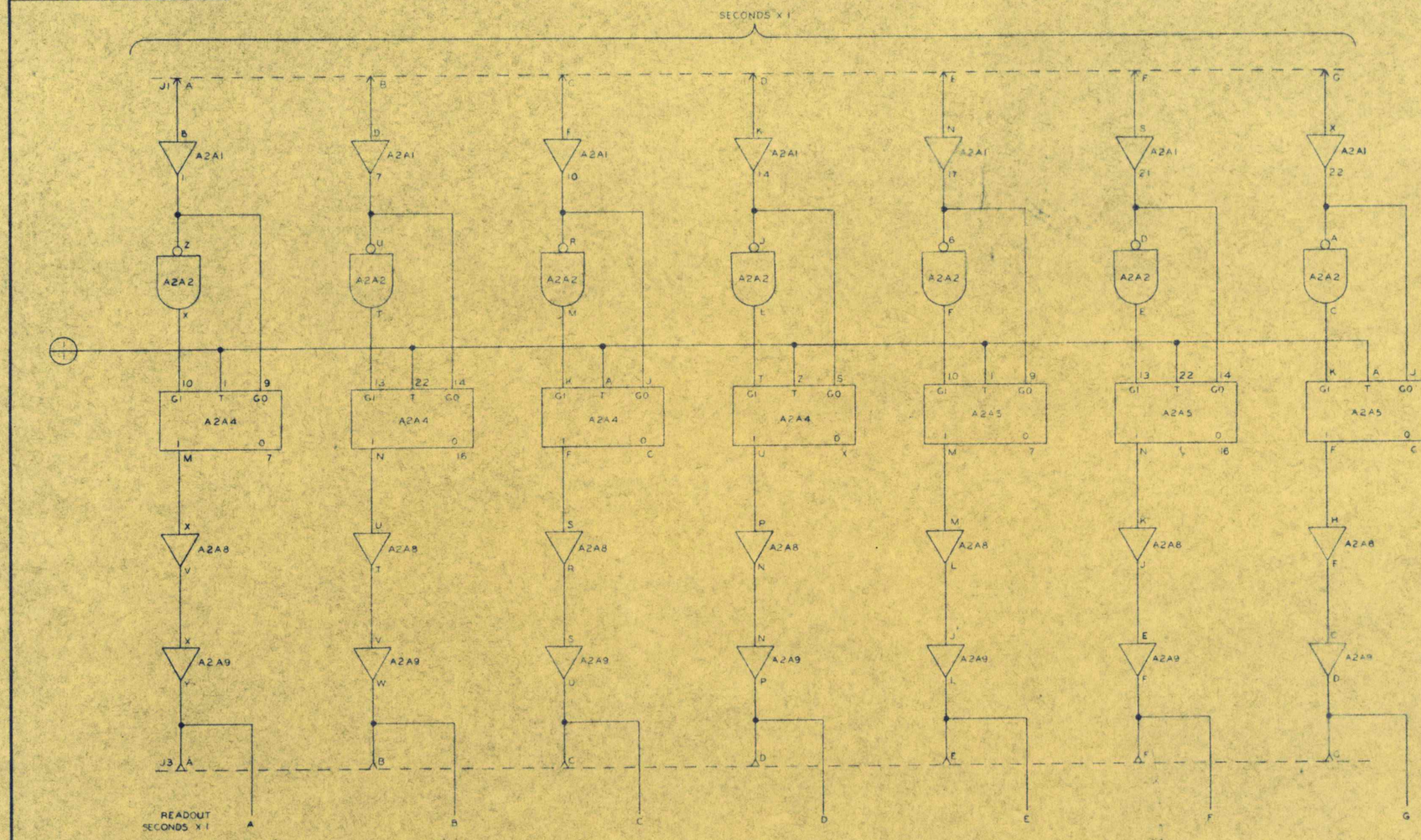
COPYMATION, INC. 101-2

Change Date
26 June 1967

MSFC FORM 433-S (AUGUST 1966)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED, BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PRINT NO.	SH	REVISIONS				
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M18342

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING AUG 27, 1966	LOGIC DIAGRAM REAL TIME EVENT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES			NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
		MATERIAL	APPROVED		SIZE D 40M18342
NEXT ASSY	USED ON	HEAT TREATMENT		WEIGHT CHECKER DATE CODE	
APPLICATION		FINAL PROTECTIVE FINISH	DIRECTOR	SCALE UNIT WEIGHT	SHEET 2 OF

5P

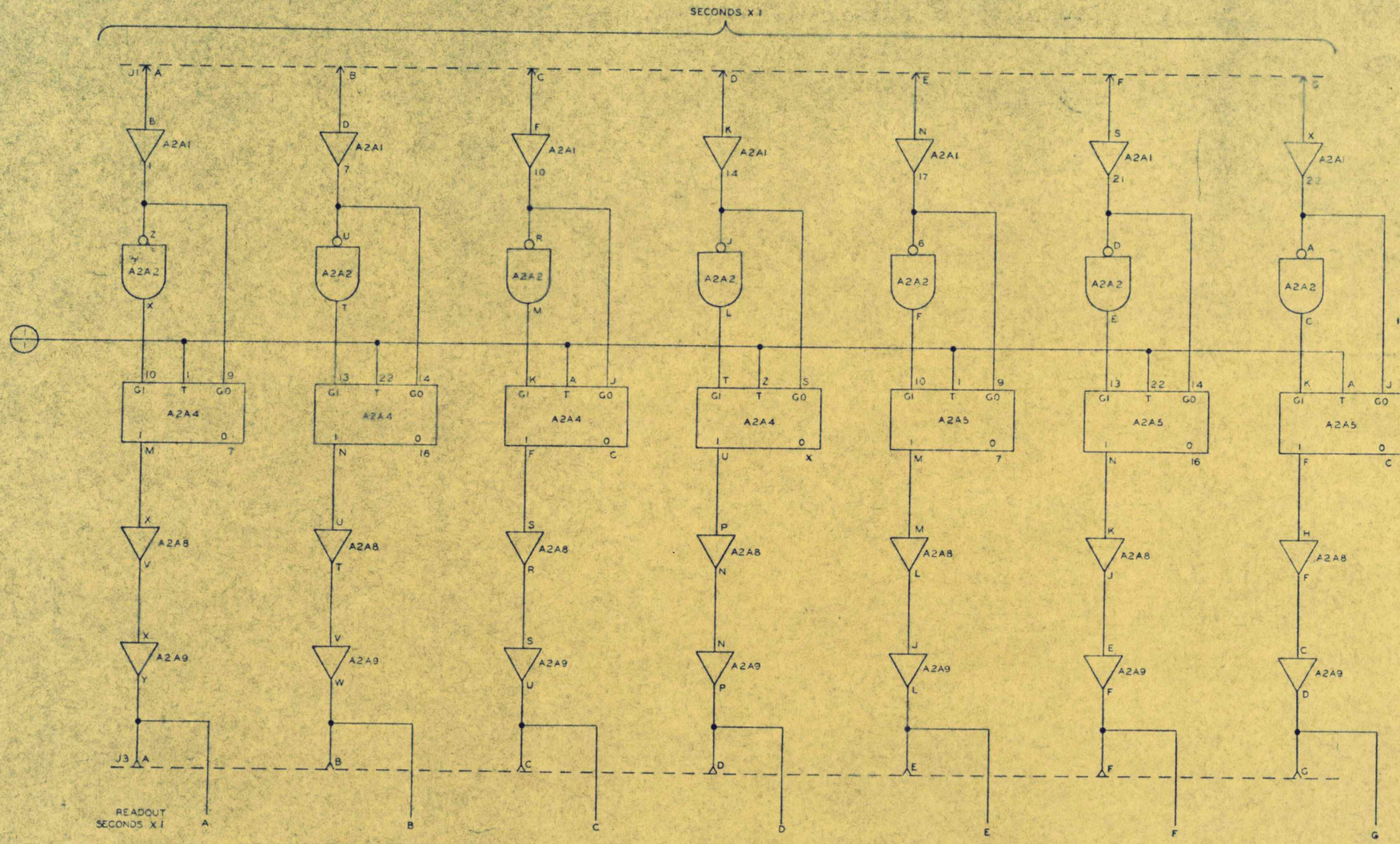
COPYMATION, INC. 161-7

Change Date
26 June 1967

NSFC FORM 422-S (AUGUST 1960)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.		REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO SP-170	9-2365	



40M08351

A

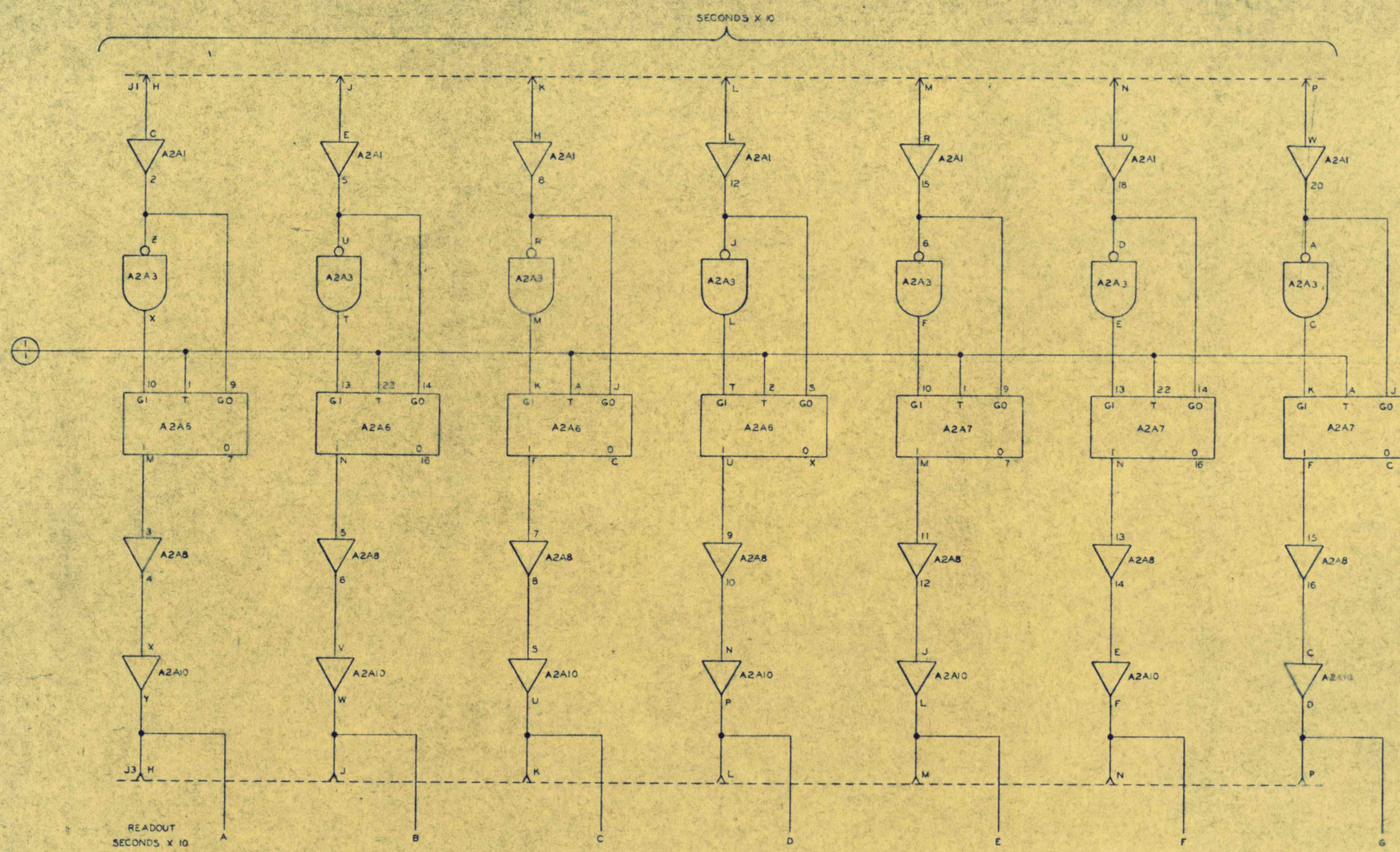
		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAY 1, 65	LOGIC DIAGRAM REAL TIME EVENT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKER		
		MATERIAL	SUBMITTED		
		HEAT TREATMENT	APPROVED		DWG SIZE D 40M08351
NEXT ASSY	USED ON	FINAL PROTECTIVE FINISH	DIRECTOR	WEIGHT CHECKER DATE CODE	SHEET 2 OF
APPLICATION				SCALE UNIT WEIGHT	

COPYMATION, INC. 121-7

MSFC FORM 433-B (AUGUST 1960)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC FD SP-170	9-23-65	



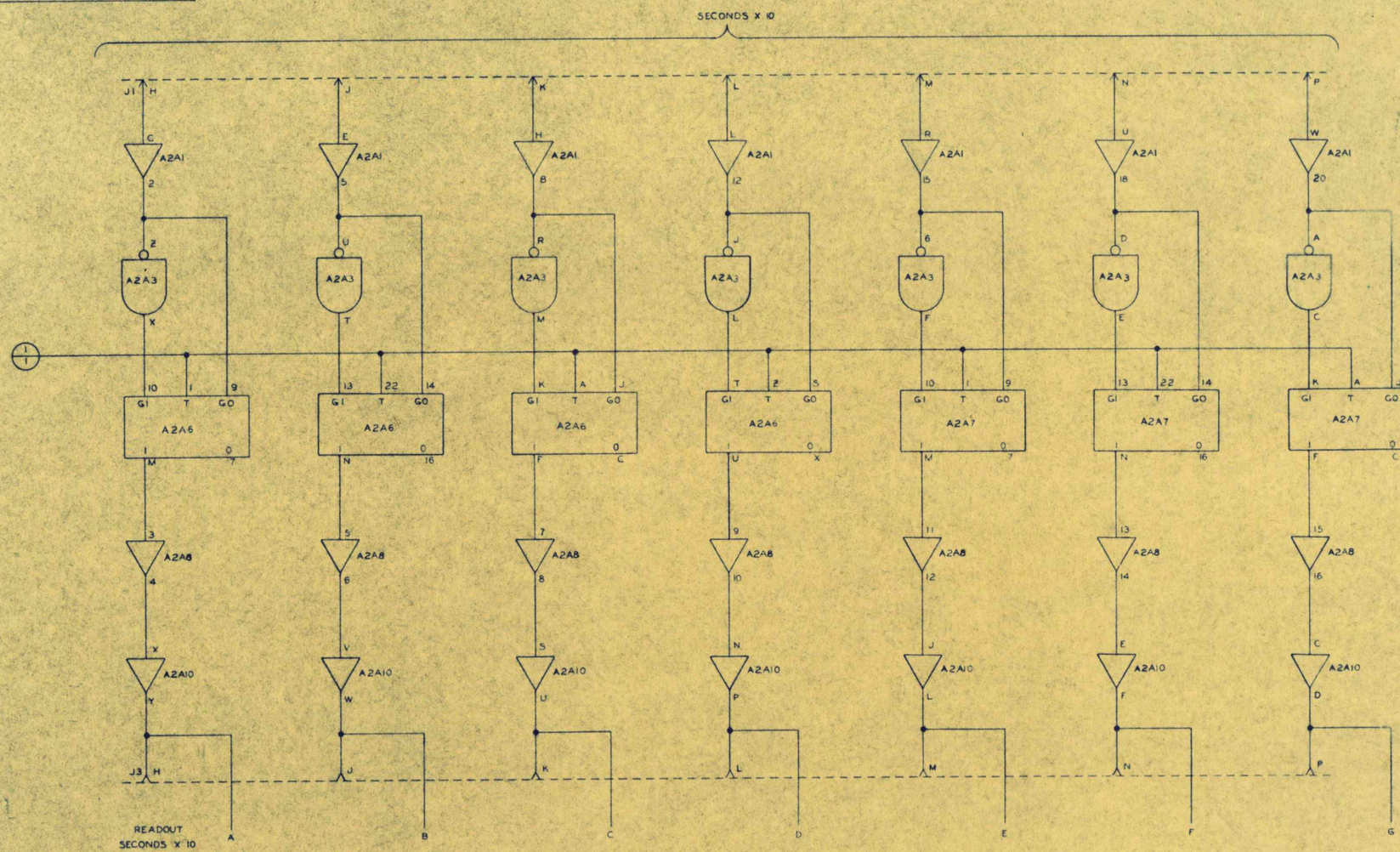
40M08351

A

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAY 1, 65		GEORGE C. MARSHALL SPACE FLIGHT CENTER
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN	CHECKER	LOGIC DIAGRAM REAL TIME EVENT COUNT CLOCK TYPE I SATURN V
		MATERIAL	CHECKED	STRESS	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
NEXT ASSY	USED ON	HEAT TREATMENT	ENG APPR	ENGINEER	
APPLICATION		FINAL PROTECTIVE FINISH	SUBMITTED	APPROVED	
				DIRECTOR	WEIGHT CHECKER / DATE / CODE — SCALE / UNIT WEIGHT — SHEET 3 OF

DWG SIZE D — 40M08351

COPYMATION, INC. 101-7



40M18342

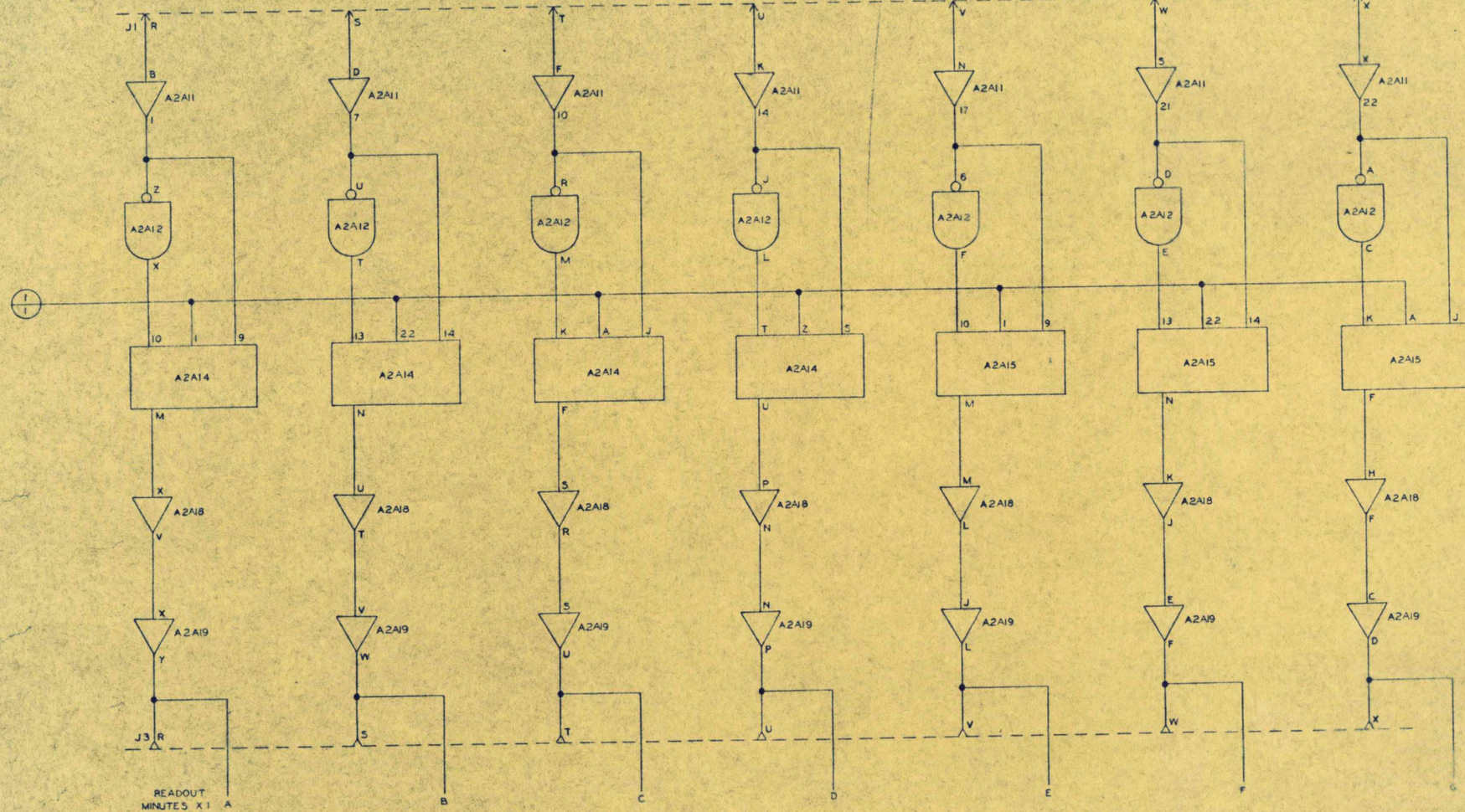
5P

Change Date
26 June 1967

NOTICE- WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED, BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-170	9-2365	

MINUTE X1



40M08351
A

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAY 1965	LOGIC DIAGRAM REAL TIME EVENT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS — DECIMALS — ANGLES —	DRAFTSMAN		DWG SIZE D — 40M08351
			CHECKER		
			STRESS ENGINEER		
			SUBMITTED		
NEXT ASSY	USED ON	MATERIAL	APPROVED	WEIGHT CHECKER — DATE — CODE —	SHEET 4 OF
APPLICATION		HEAT TREATMENT	DIRECTOR	SCALE — UNIT WEIGHT —	
		FINAL PROTECTIVE FINISH			

PSR
DEPTH CODE

Revised 5/17/65 SP

COPYMATION, INC. 101-7

MSFC FORM 650-5 (AUGUST 1966)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS					
ECN NO.	PT	ZONE	SYM	DESCRIPTION	DATE	APPROVAL

MINUTE X1

J1 R

A2A11 (B, I) — A2A12 (Z, X) — A2A14 (10, I, 9; M) — A2A18 (X, V) — A2A19 (X, Y) — J3 R — READOUT MINUTES X1 A

A2A11 (D, 7) — A2A12 (U, T) — A2A14 (13, 22, 14; N) — A2A18 (U, T) — A2A19 (V, W) — S — B

A2A11 (F, 10) — A2A12 (R, M) — A2A14 (K, A, J; F) — A2A18 (S, R) — A2A19 (S, U) — T — C

A2A11 (K, 14) — A2A12 (J, L) — A2A14 (T, Z, S; U) — A2A18 (P, N) — A2A19 (N, P) — U — D

A2A11 (N, 17) — A2A12 (6, F) — A2A15 (10, 1, 9; M) — A2A18 (M, L) — A2A19 (J, L) — V — E

A2A11 (S, 21) — A2A12 (D, E) — A2A15 (13, 22, 14; N) — A2A18 (K, J) — A2A19 (E, F) — W — F

A2A11 (X, 22) — A2A12 (A, C) — A2A15 (K, A, J; F) — A2A18 (H, F) — A2A19 (C, D) — X — G

40M18342

	UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING AUG 27 1966	LOGIC DIAGRAM REAL TIME EVENT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER
SEE ENGINEERING RECORDS	DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS — DECIMALS — ANGLES —	DRAFTING		NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
	MATERIAL	ENGR		HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON	HEAT TREATMENT	PROJECT		SIZE D — 40M18342
APPLICATION	FINAL PROTECTIVE FINISH	SUBMITTED		
		APPROVED DIRECTOR	WEIGHT CM/FR/ER — DATE — CODE — SCALE — UNIT WEIGHT —	SHEET 4 OF

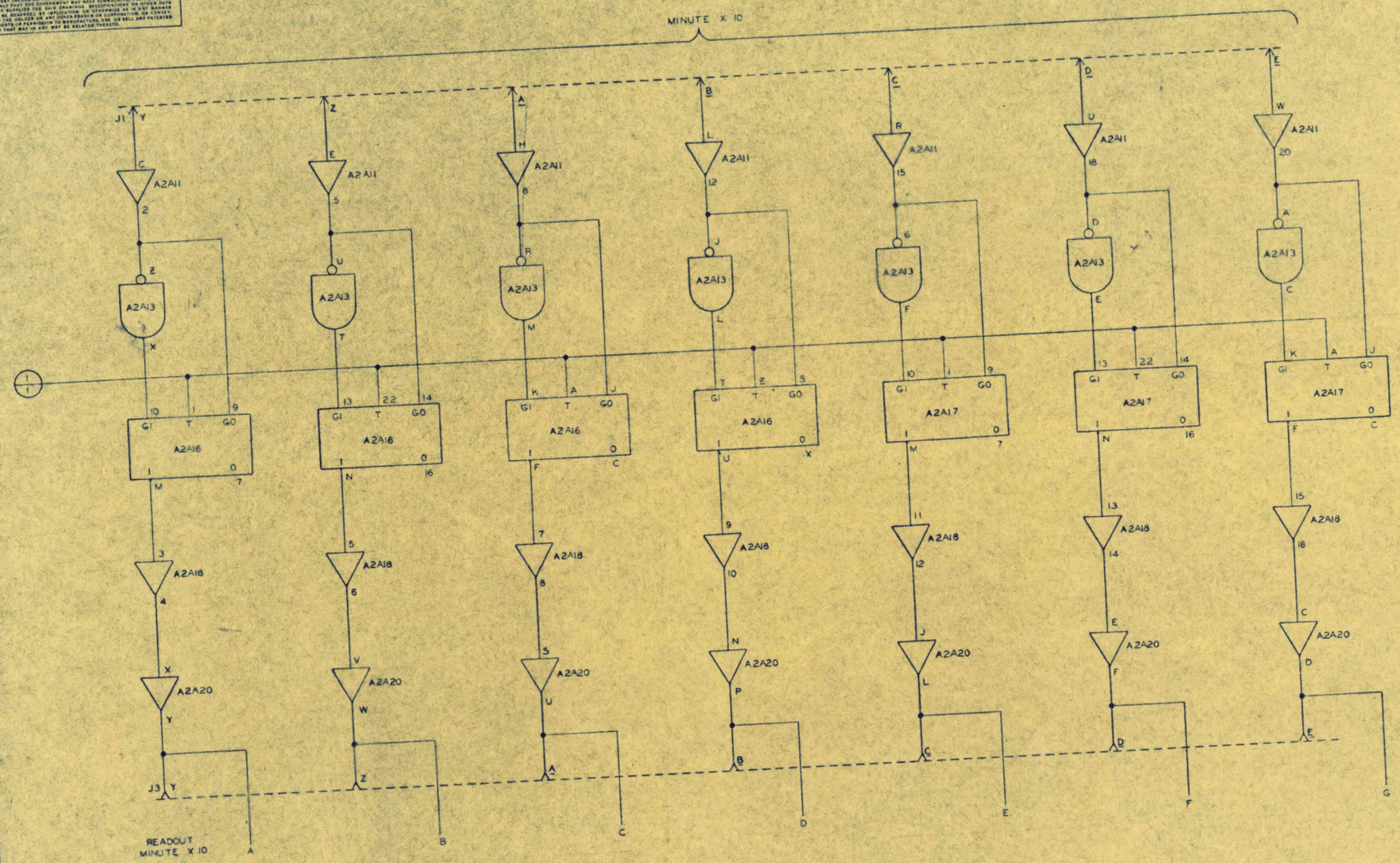
COPYMATION, INC. 351-7

5P

Change Date
26 June 1967

REVISIONS					
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC EO 5P-170	9-23-65	

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.



40M08351
A

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING 7 JAN 65	LOGIC DIAGRAM REAL TIME EVENT COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON	MATERIAL	DRAFTSMAN / CHECKER	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
APPLICATION	HEAT TREATMENT	STRESS / ENGINEER	DWG SIZE D — 40M08351
	FINAL PROTECTIVE FINISH	SUBMITTED / APPROVED / DIRECTOR	SHEET 5 OF
		WEIGHT CHECKER / DATE / CODE	
		SCALE / UNIT WEIGHT	

PSK — BIRTH CODE

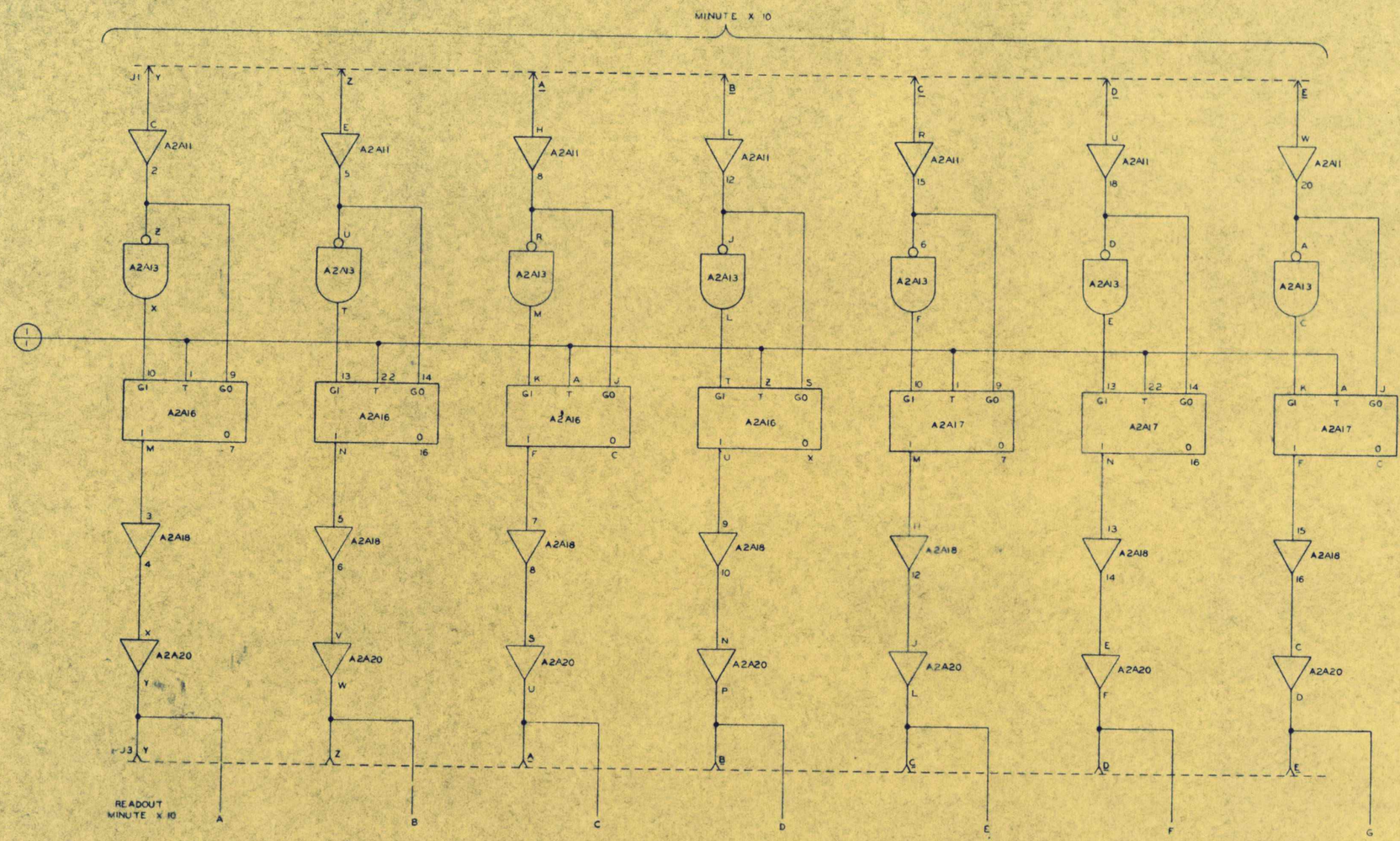
Issued 5/1/65 SP

3

COPYMATION, INC. 101-7

NOTICE: WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	W.F.	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M18342

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING AUG 27, 1966	LOGIC DIAGRAM REAL TIME EVENT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
NEXT ASSY / USED ON	MATERIAL	APPROVED	WEIGHT CHECKED / DATE / CODE	SIZE D	40M18342
APPLICATION	HEAT TREATMENT	DIRECTOR	SCALE / UNIT WEIGHT	SHEET 5 OF	
	FINAL PROTECTIVE FINISH				

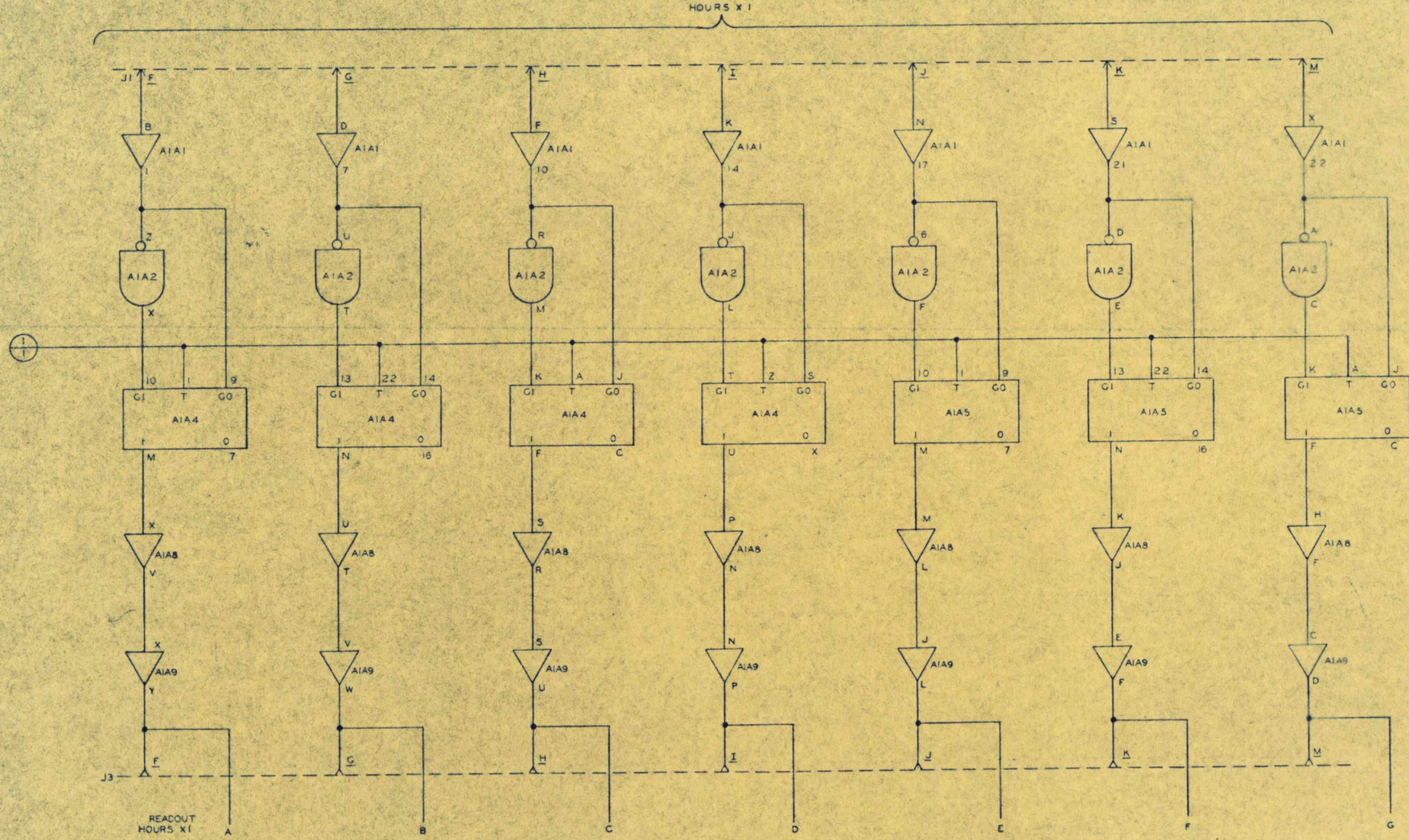
5P

Change Date
26 June 1967

NAFC FORM 423-2 (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY WAY LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC. EO SP-170	9-23-65	



40M08351
A

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS — DECIMALS — ANGLES — MATERIAL — HEAT TREATMENT — FINAL PROTECTIVE FINISH —	ORIGINAL DATE OF DRAWING MAY 1 65 DRAFTSMAN — CHECKER — COST/PR — STRESS — SUBMITTED — ENGINEER — APPROVED DIRECTOR	LOGIC DIAGRAM REAL TIME EVENT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
NEXT ASSY — USED ON — APPLICATION		WEIGHT CHECKER — DATE — CODE — SCALE — UNIT WEIGHT —		DWG SIZE D — 40M08351 SHEET 6 OF

DIRT'S CODE

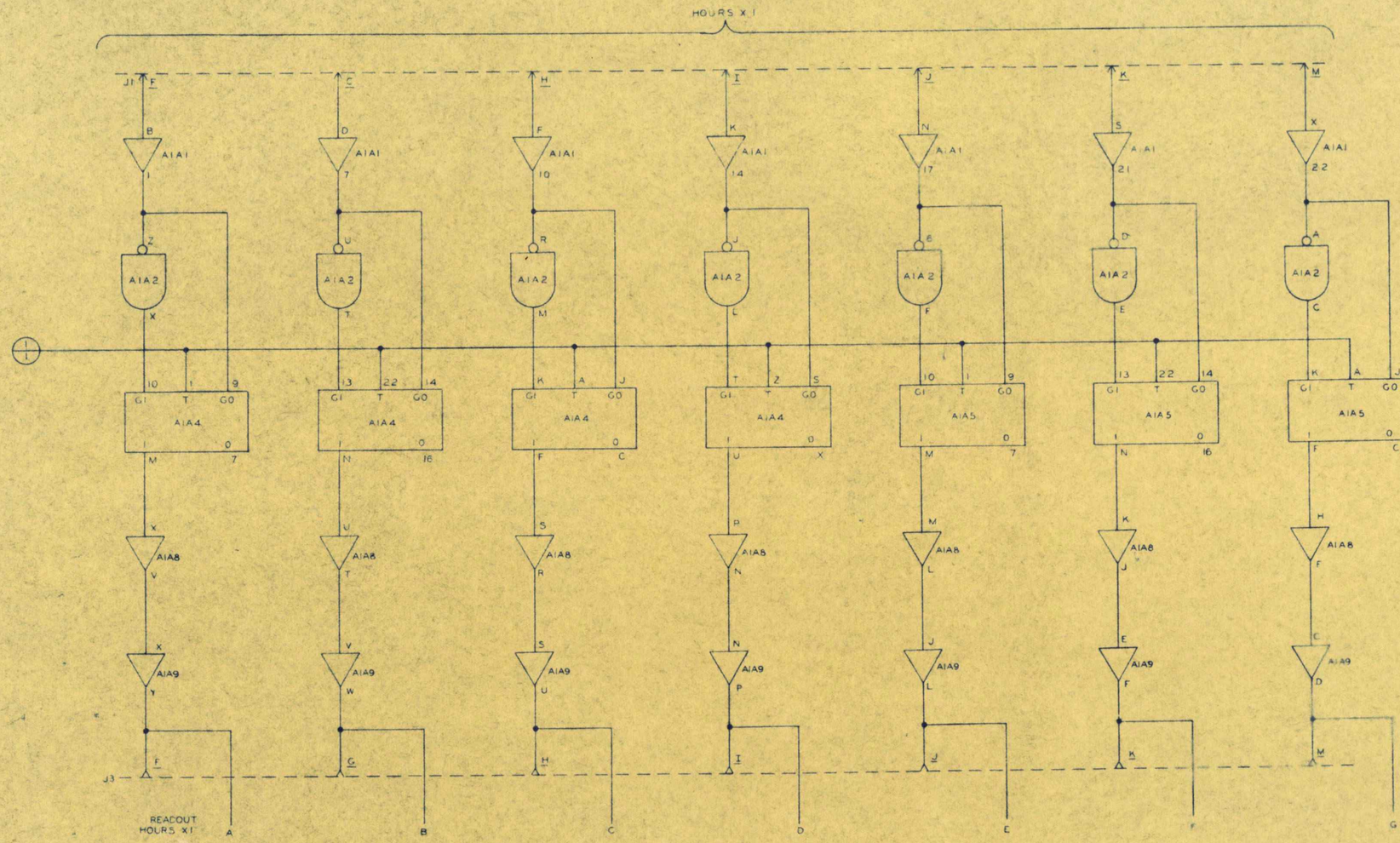
Jones 9/9/65 JP

COPYMATION, INC. 161-7

MSFC FORM 432-S (AUGUST 1960)

NOTICE - When GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M18342

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING AUG 27, 1966	LOGIC DIAGRAM REAL TIME EVENT COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE; UNIT WEIGHT
APPLICATION			SHEET 6 OF

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE ALABAMA

DWG SIZE D — 40M18342

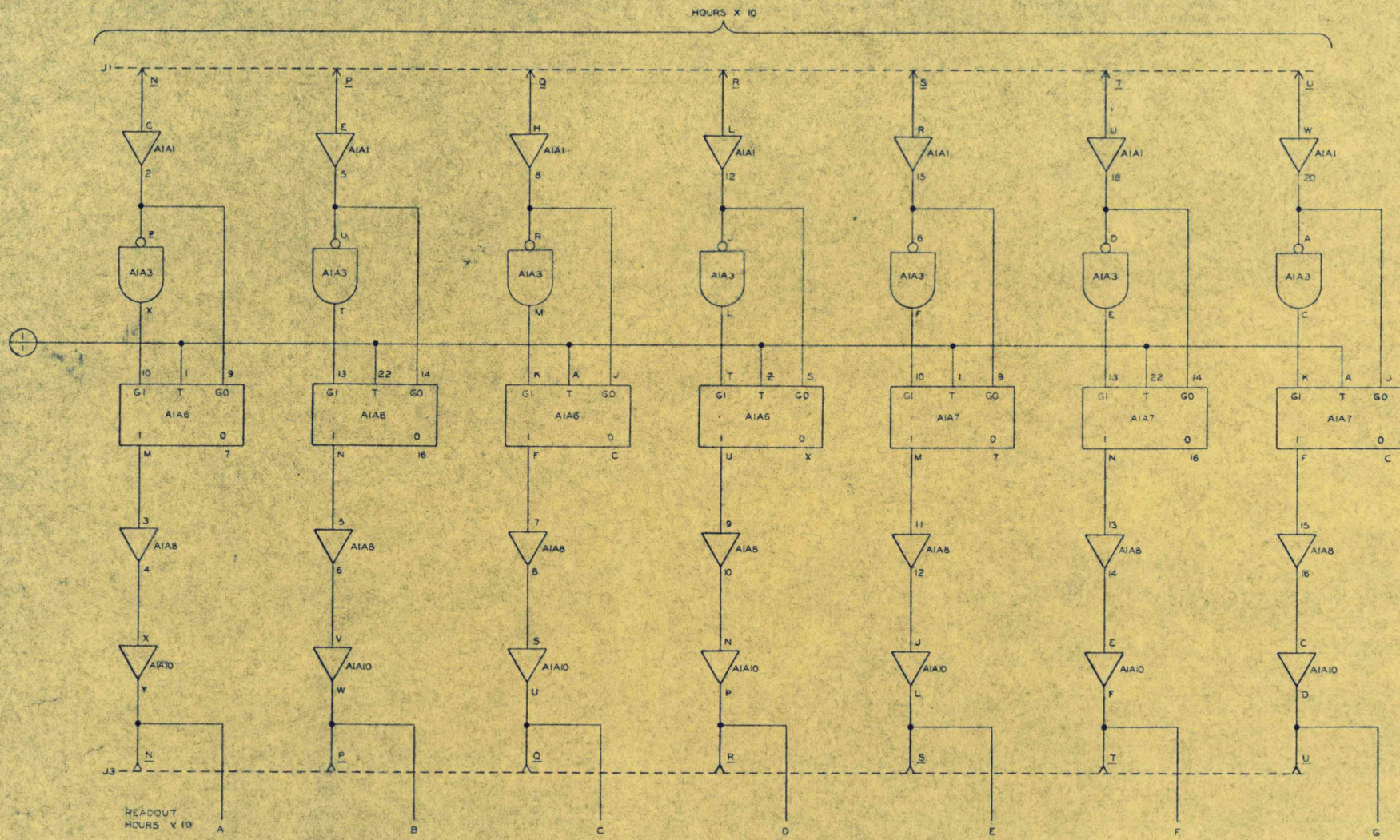
5P

COPYMATION, INC. 101-7

Change Date
26 June 1967

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	M.F.	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-170	9-23-65	



40M08351
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		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAY 65	LOGIC DIAGRAM REAL TIME EVENT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE	DWG SIZE D 40M08351
		MATERIAL		SCALE UNIT WEIGHT	SHEET 7 OF 7
NEXT ASSY USED ON		HEAT TREATMENT			
APPLICATION		FINAL PROTECTIVE FINISH			

PSL
DISTR CODE

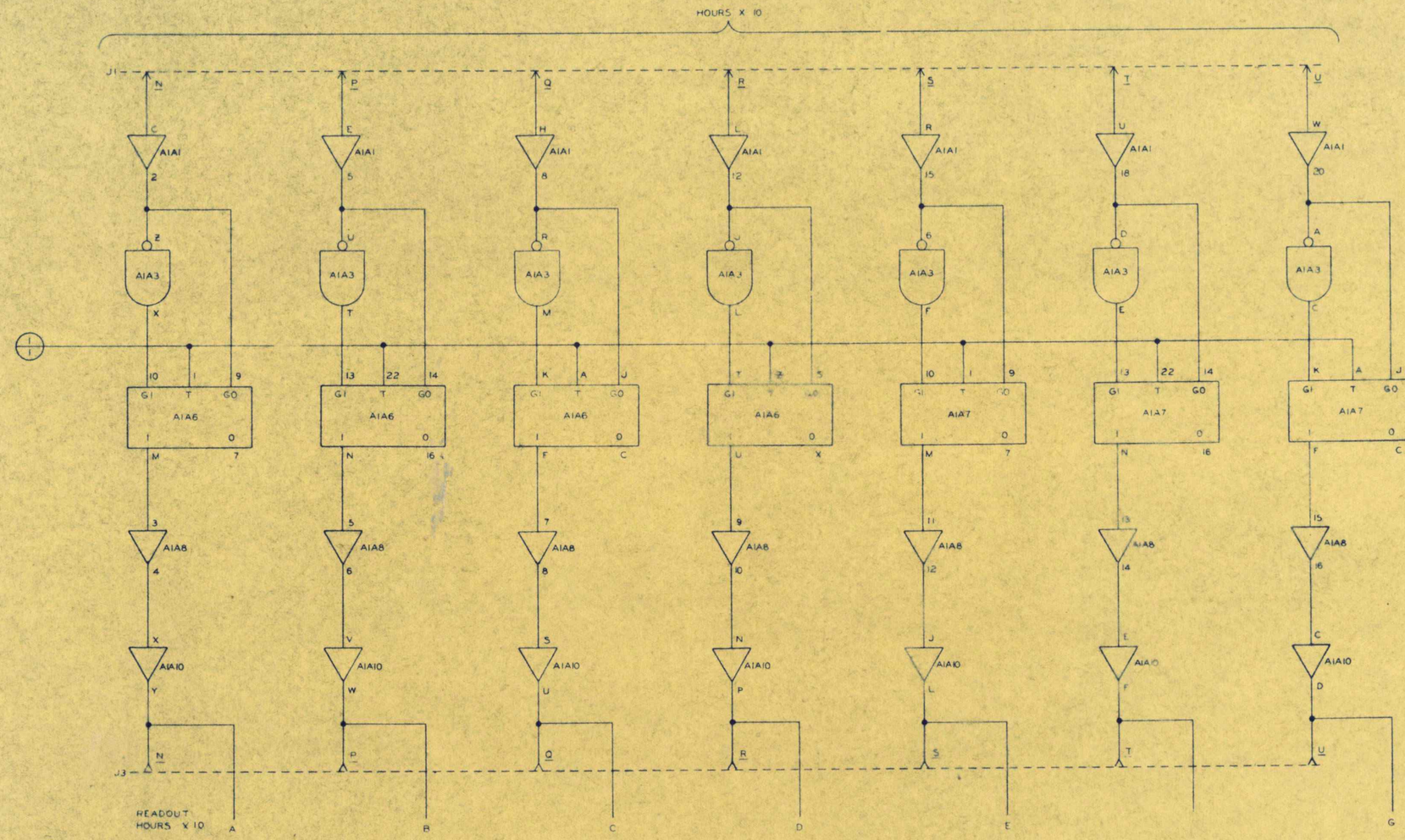
COPYMATION, INC. 161-7

Saturn 5/19/65 SD

MSFC FORM 482-B (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA, IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	M.F.	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



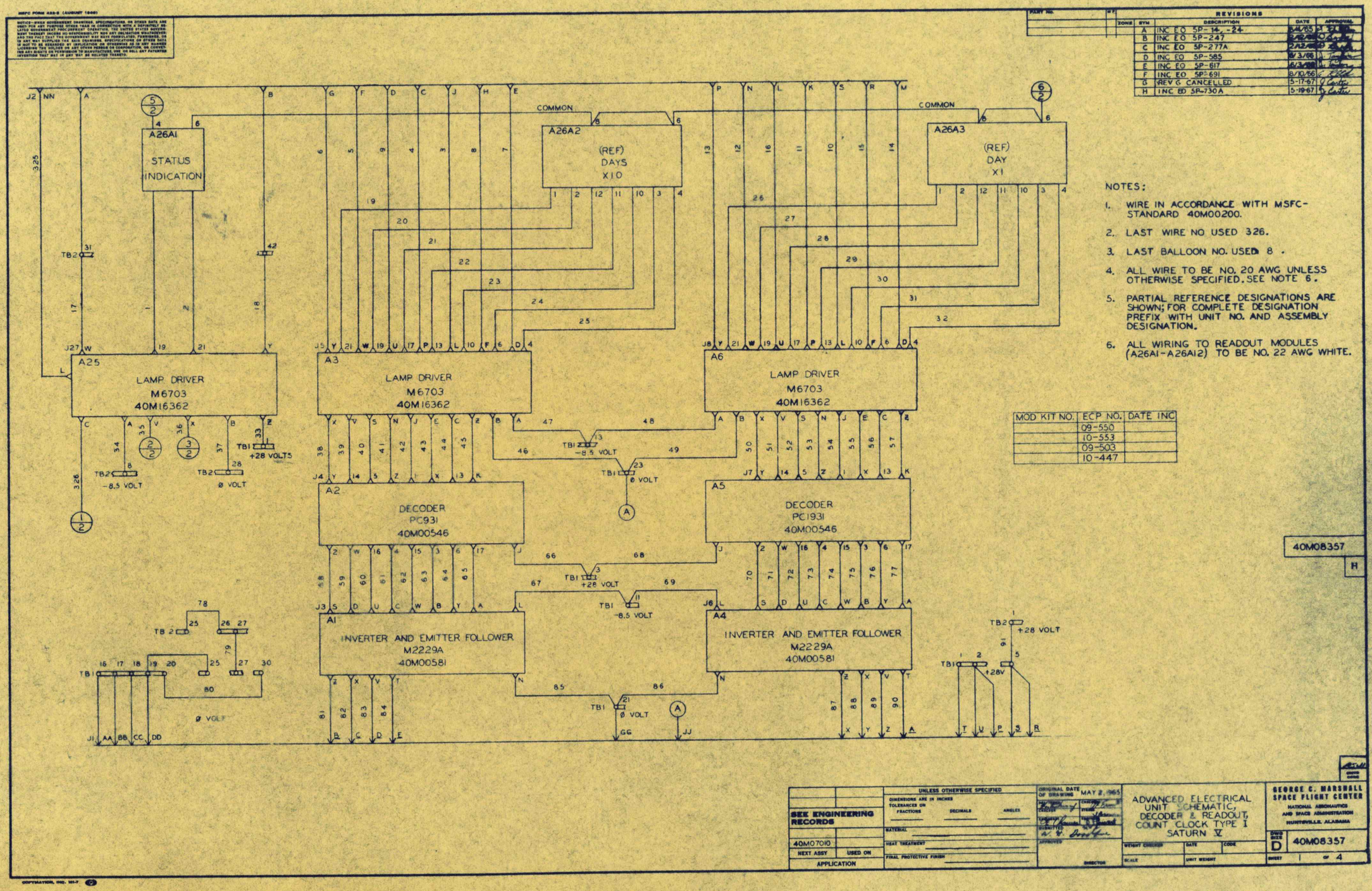
		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING AUG 27, 1966	LOGIC DIAGRAM REAL TIME EVENT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN		SIZE D 40M18342
		MATERIAL	CHECKED		
NEXT ASSY	USED ON	HEAT TREATMENT	SUBMITTED		
APPLICATION		FINAL PROTECTIVE FINISH	APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE SCALE UNIT V TIGHT	SHEET 7 OF 7

40M18342

5P

COPYMATION, INC. 181-7

Change Date
26 June 1967



REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC EO 5P-14, -24	3/4/65	
	B	INC EO 5P-247	2/2/66	
	C	INC EO 5P-277A	2/22/66	
	D	INC EO 5P-585	6/3/66	
	E	INC EO 5P-617	6/3/66	
	F	INC EO 5P-691	8/10/66	
	G	REV G CANCELLED	5-17-67	
	H	INC EO 5P-730A	5-19-67	

NOTES:

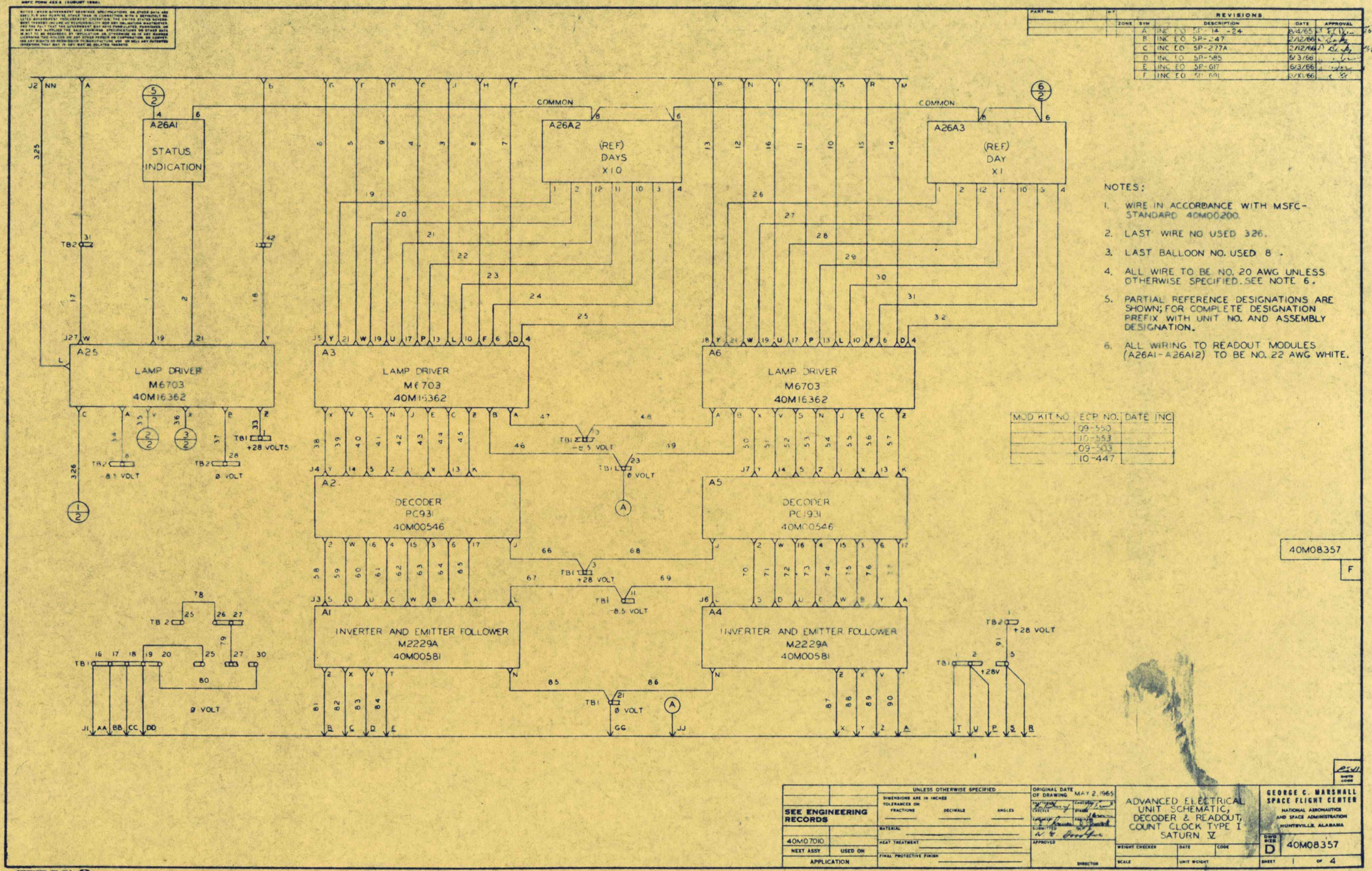
1. WIRE IN ACCORDANCE WITH MSFC-STANDARD 40M00200.
2. LAST WIRE NO USED 326.
3. LAST BALLOON NO. USED 8 .
4. ALL WIRE TO BE NO. 20 AWG UNLESS OTHERWISE SPECIFIED. SEE NOTE 6.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION.
6. ALL WIRING TO READOUT MODULES (A26A1-A26A12) TO BE NO. 22 AWG WHITE.

MOD KIT NO.	ECP NO.	DATE INC
	09-550	
	10-553	
	09-503	
	10-447	

40M08357
H

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING MAY 2, 1965	ADVANCED ELECTRICAL UNIT SCHEMATIC, DECODER & READOUT, COUNT CLOCK TYPE I SATURN V
40M07010	MATERIAL		GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON	HEAT TREATMENT		SIZE D, 40M08357
APPLICATION	FINAL PROTECTIVE FINISH		SHEET 1 OF 4

Change Date
26 June 1967



PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC E.O. SP-14-24	8/4/65	
		B	INC E.O. SP-247	2/12/66	
		C	INC E.O. SP-277A	2/12/66	
		D	INC E.O. SP-585	6/3/66	
		E	INC E.O. SP-617	6/3/66	
		F	INC E.O. SP-691	9/30/66	

NOTES:

1. WIRE IN ACCORDANCE WITH MSFC-STANDARD 40M00200.
2. LAST WIRE NO USED 326.
3. LAST BALLOON NO. USED 8 .
4. ALL WIRE TO BE NO. 20 AWG UNLESS OTHERWISE SPECIFIED. SEE NOTE 6.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION.
6. ALL WIRING TO READOUT MODULES (A26A1-A26A12) TO BE NO. 22 AWG WHITE.

MOD KIT NO.	ECP NO.	DATE INC
	09-550	
	10-553	
	09-503	
	10-447	

40M08357
F

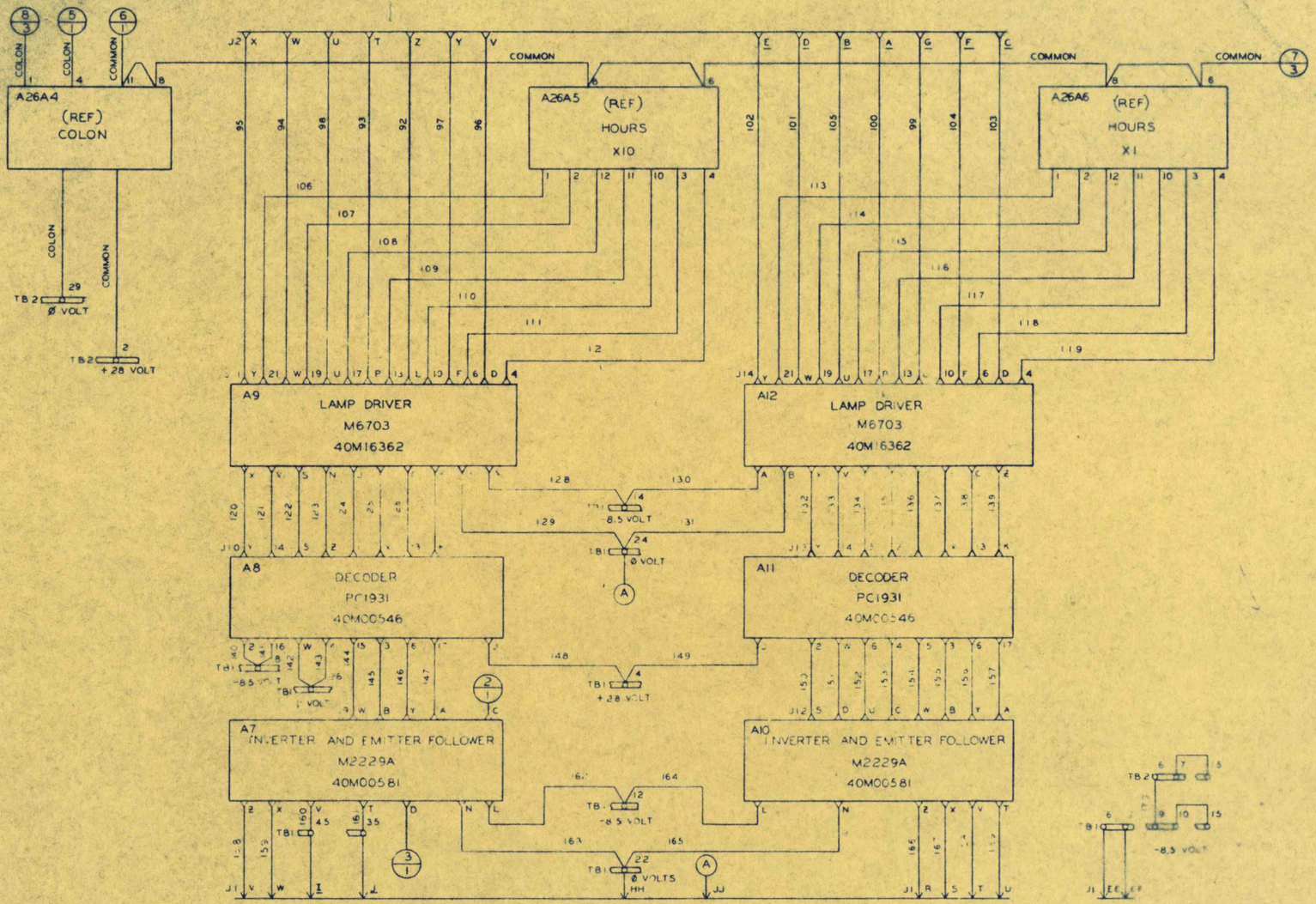
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAY 2, 1965	ADVANCED ELECTRICAL UNIT SCHEMATIC, DECODER & READOUT, COUNT CLOCK TYPE I SATURN V
40M07010			
NEXT ASSY / USED ON			
APPLICATION			

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

SIZE D | 40M08357 | SHEET 1 OF 4

Change Date
30 November, 1966

PART No.	REVISIONS			
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC EO SP-14	8-4-65	
	B	INC EO SP-247	2/12/66	
	C	INC EO SP-277A	2/12/66	
	E	INC EO SP-617	6/3/66	
	F	INC EO SP-691	8-11-66	



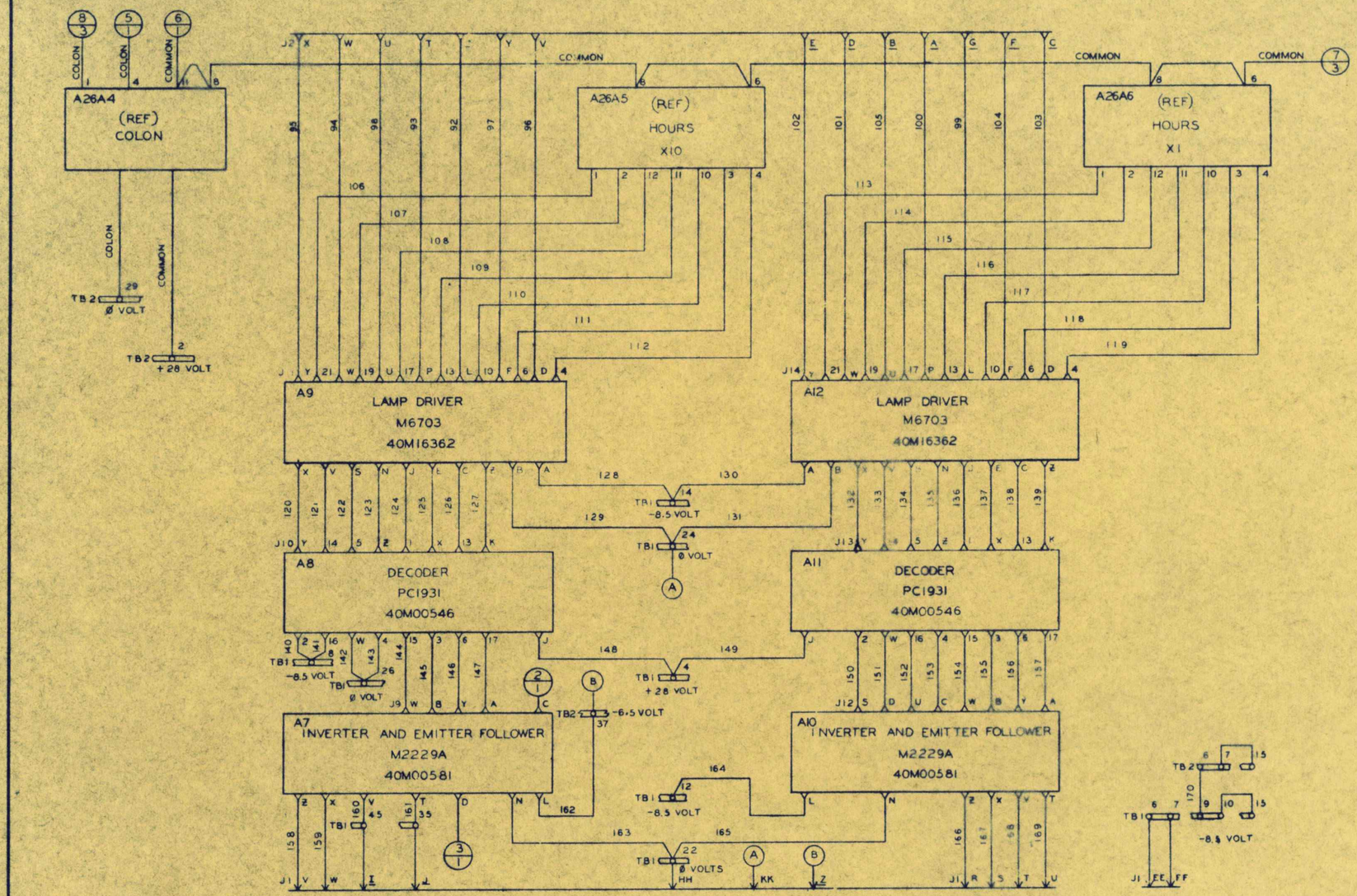
40M08357
F

	UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAY 2, 1965	ADVANCED ELECTRICAL UNIT SCHEMATIC, DECODER & READOUT, COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER
SEE ENGINEERING RECORDS	DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES			NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
	MATERIAL			DWG SIZE D 40M08357
NEXT ASSY USED ON	HEAT TREATMENT		WEIGHT CHECKER DATE CODE	
APPLICATION	FINAL PROTECTIVE FINISH	DIRECTOR	SCALE UNIT WEIGHT	SHEET 2 OF

Change Date
30 November, 1966

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

PART No.	N/P	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
				REVISIONS		
			A	INC EO 5P-14	8-4-66	
			B	INC EO 5P-247	2/12/68	
			C	INC EO 5P-277A	2/12/68	
			E	INC EO 5P-817	6/3/66	
			F	INC EO 5P-691	8-11-66	
			H	INC EO 5P-730A	5-19-67	



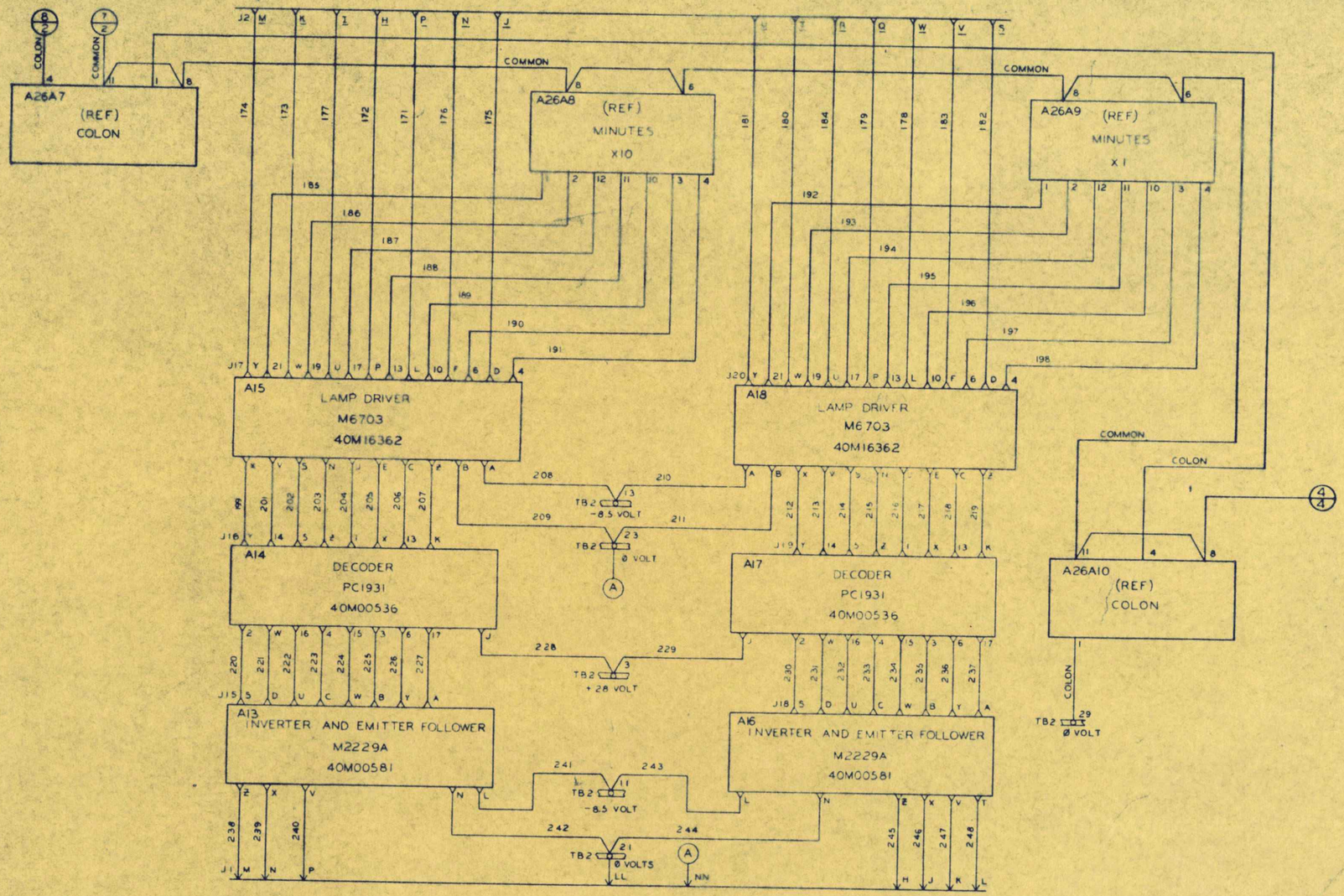
40M08357
H

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS DECIMALS ANGLES	ORIGINAL DATE OF DRAWING MAY 2, 1965	ADVANCED ELECTRICAL UNIT SCHEMATIC, DECODER & READOUT, COUNT CLOCK TYPE I SATURN V
NEXT ASSY USED ON	MATERIAL	DRAWN	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
APPLICATION	HEAT TREATMENT	CHECKED	SIZE D, 40M08357
	FINAL PROTECTIVE FINISH	ENGR APPROVAL	WEIGHT CHECKED, DATE, CODE
		SUBMITTED	SCALE, UNIT WEIGHT
		APPROVED DIRECTOR	SHEET 2 OF

Change Date
26 June 1967

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED, BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	INC E O SP-247	FEB 1966	D Smith
C	INC EO SP-277A	5/12/66	D Smith
E	INC EO SP-617	6-3-66	S Wade
F	INC EO SP-691	8-11-66	L K Hill



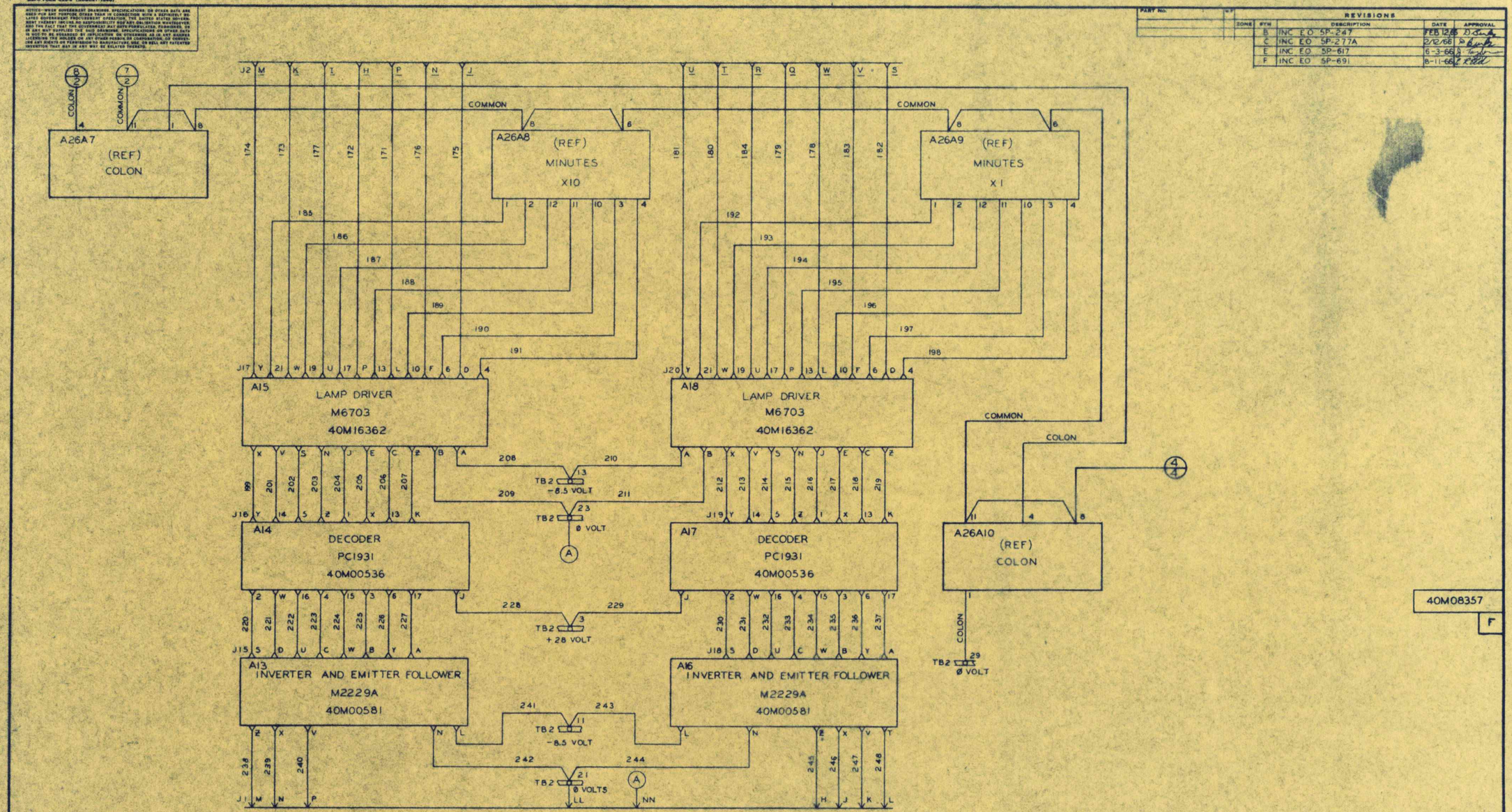
40M08357
F

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAY 2,1965	ADVANCED ELECTRICAL UNIT SCHEMATIC DECODER & READOUT COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON APPLICATION		DIRECTOR	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
			SIZE D, 40M08357, SHEET 3 OF

i.o. SA-1/65

56

Change Date
30 November, 1966



REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	INC E.O. 5P-247	FEB 1966	
C	INC E.O. 5P-277A	2/12/66	
E	INC E.O. 5P-617	6-3-66	
F	INC E.O. 5P-691	8-11-66	

40M08357
F

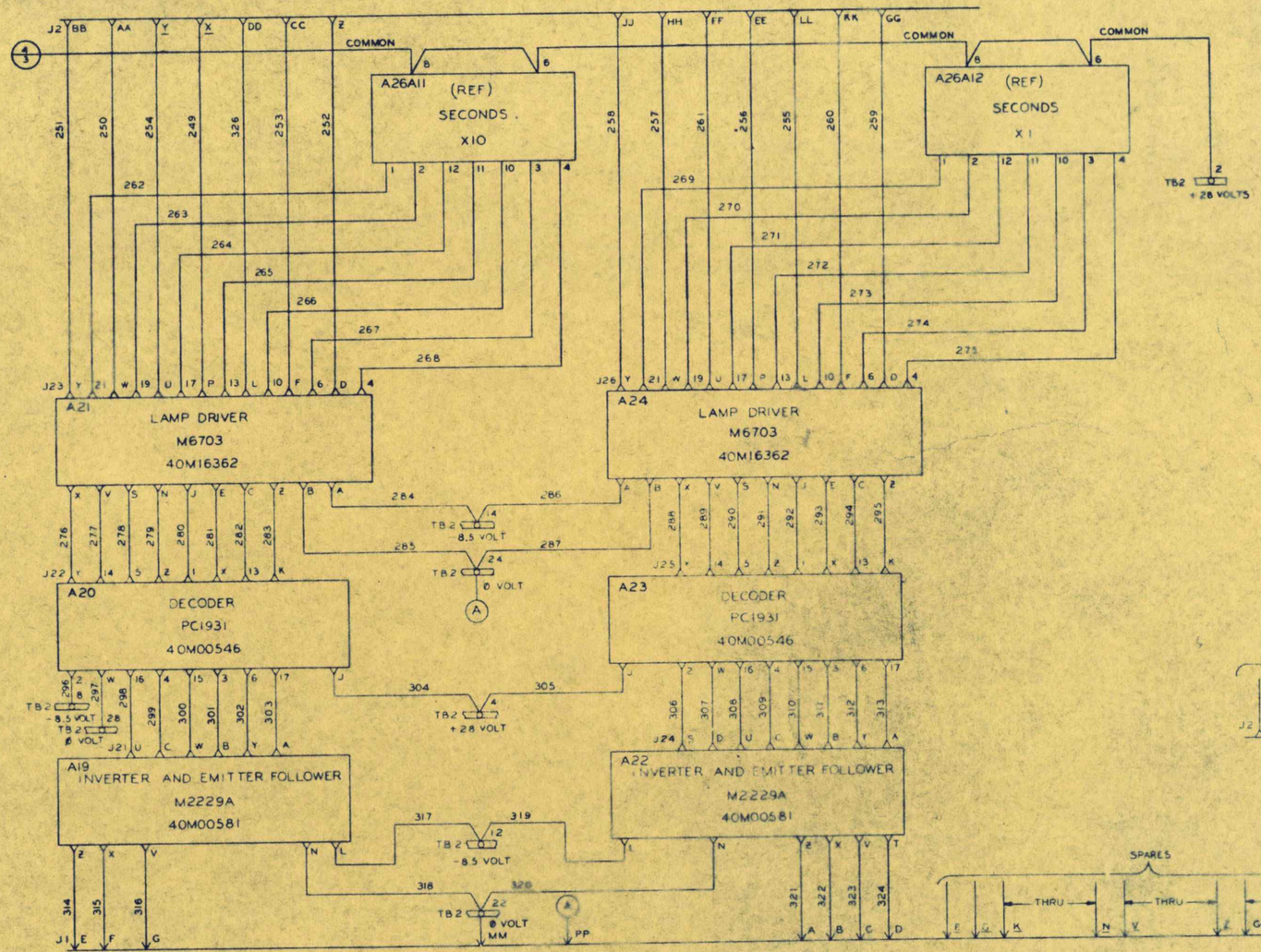
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAY 2, 1965	ADVANCED ELECTRICAL UNIT SCHEMATIC DECODER & READOUT COUNT CLOCK TYPE I SATURN V
NEXT ASSY / USED ON APPLICATION		APPROVED / DIRECTOR	WEIGHT CHECKER / SCALE / DATE / UNIT WEIGHT / CODE

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40M08357 — SHEET 3 OF

Change Date
26 June 1967

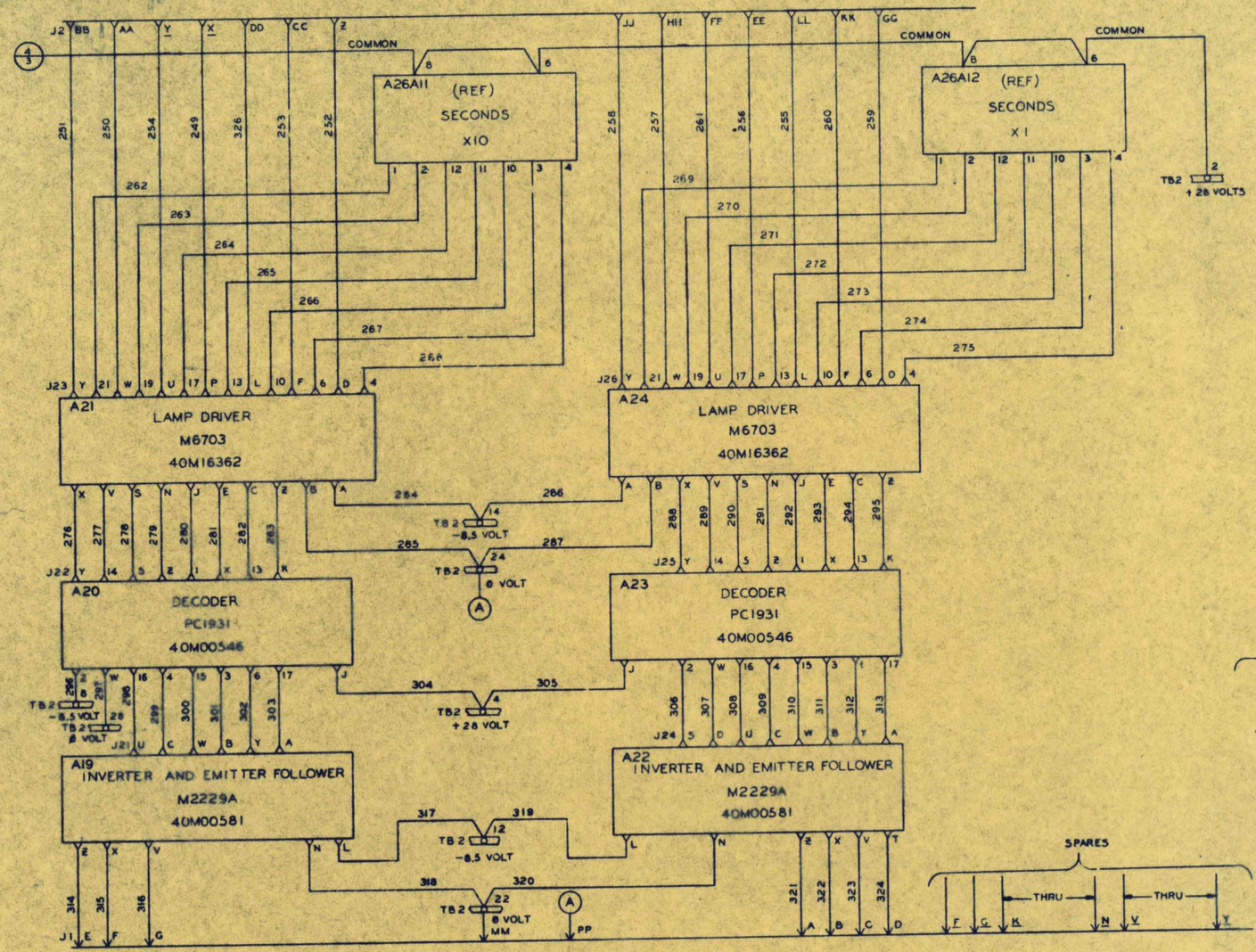
REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	B	INC EO 5P-241	2-8-66	
	C	INC EO 5P-277	2-8-66	
	E	INC EO 5P-617	6-3-66	
	F	INC EO 5P-691	8-11-66	


J2 BB AA Y X DD CC Z
COMMON
A26A11 (REF) SECONDS X10
JJ HH FF EE LL KK GG
COMMON
A26A12 (REF) SECONDS X1
TB2 2 +28 VOLTS
A21 LAMP DRIVER M6703 40M16362
A24 LAMP DRIVER M6703 40M16362
A20 DECODER PC1931 40M00546
A23 DECODER PC1931 40M00546
A19 INVERTER AND EMITTER FOLLOWER M2229A 40M00581
A22 INVERTER AND EMITTER FOLLOWER M2229A 40M00581
TB2 14 -8.5 VOLT
TB2 24 0 VOLT
TB2 4 +28 VOLT
TB2 12 -8.5 VOLT
TB2 22 0 VOLT MM
SPARES
SPARES THRU THRU THRU
40M08357 F

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAY 2,1965	ADVANCED ELECTRICAL UNIT SCHEMATIC DECODER & READOUT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
NEXT ASSY USED ON APPLICATION	MATERIAL / HEAT TREATMENT / FINAL PROTECTIVE FINISH	APPROVED DIRECTOR	WEIGHT CHECKED / SCALE	SIZE D 40M08357 SHEET 4 OF 4

Change Date
30 November, 1966

PART NO.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		B	INC EO 5P-241	2-8-66	
		C	INC EO 5P-277	2-8-66	
		E	INC EO 5P-617	6-3-66	
		F	INC EO 5P-691	8-11-66	
		H	INC EO 5P-730A	5-17-67	



40M08357 H

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING MAY 2,1965	ADVANCED ELECTRICAL UNIT SCHEMATIC DECODER & READOUT COUNT CLOCK TYPE I SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKER ENGINEER DESIGNER APPROVED DIRECTOR	WEIGHT CHECKER DATE CODE SCALE UNIT WEIGHT	SIZE D 40M08357 SHEET 4 of 4
NEXT ASSY USED ON APPLICATION		MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH			

i.e. 5/31/67

Change Date
26 June 1967

NASA-S-66-31

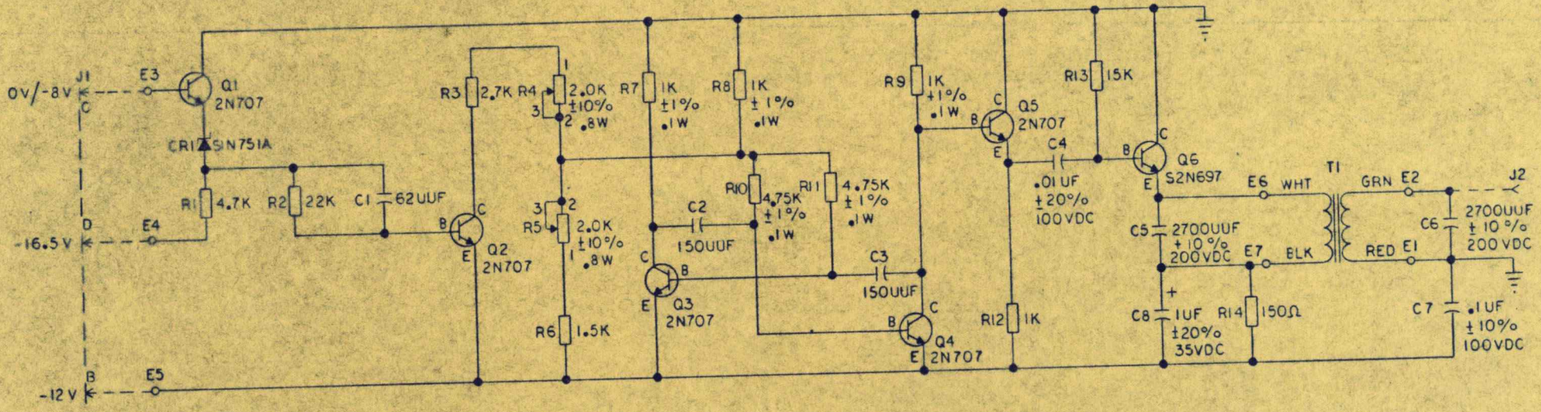
NASA-S-66-31

NASA-S-66-31

Notice — When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

PART NO.	MF	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL

UNLESS OTHERWISE SPECIFIED:
RESISTORS ARE ±5%, 1/4W
CAPACITORS ARE ±5%, 500 VDC



40M08378

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING SEPT 3, 1965
40M08383	SATURN	MATERIAL	DRAFTSMAN HCM; CHECKER
NEXT ASSY	USED ON	HEAT TREATMENT	CHECKER; STRESS
APPLICATION		FINAL PROTECTIVE FINISH	ENGINEER; APPROVED; SUBMITTED
			APPROVED; DIRECTOR

ASSEMBLY, M-6631 VOLTAGE CONTROLLED OSCILLATOR

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

WEIGHT CHECKER	DATE	CODE
SCALE	UNIT WEIGHT	

DWG SIZE D — 40M08378
SHEET 2 of 2

Rev 2-31
P5D
DATA CODE

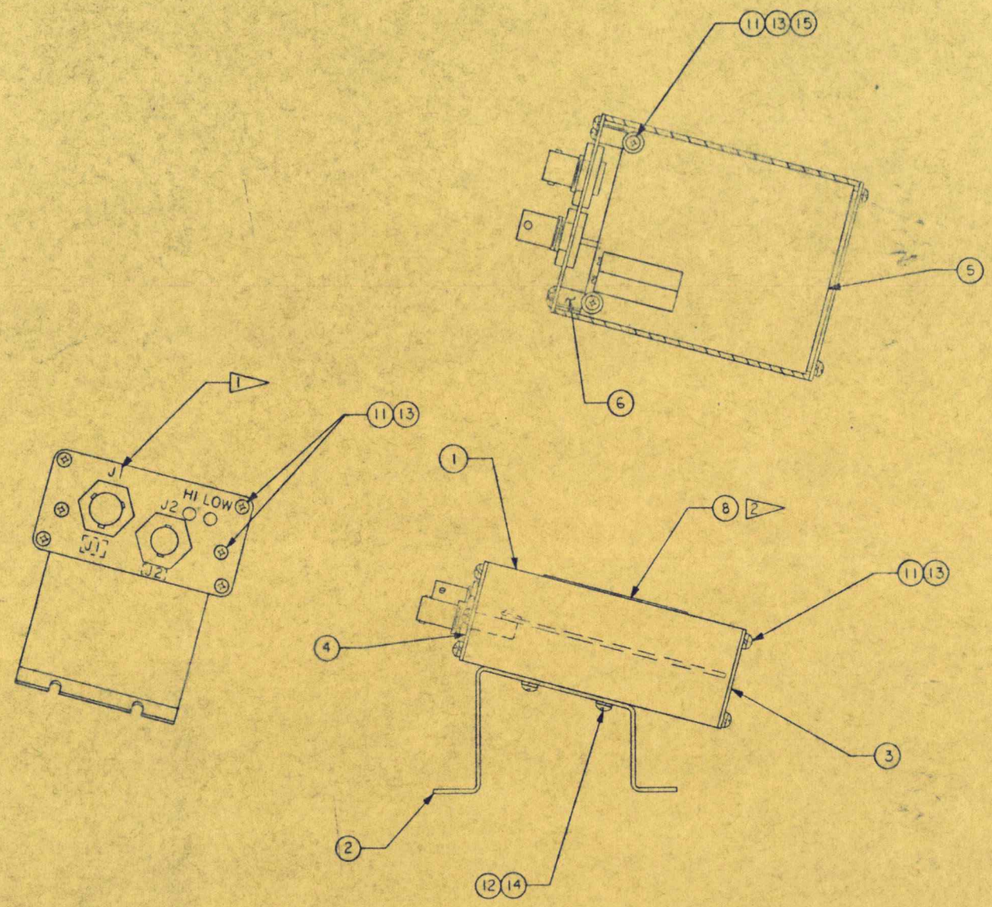
9-25-65

5P

19

Notice — When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

PART NO.	W.P.	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



NOTES

1. MARK COMPONENT DESIGNATIONS PER MSFC-STD-383.
2. APPLY IDENTIFICATION PLATE FIND NO. 8 IN A VISIBLE LOCATION ON FIND NO. 1.
3. WIRE PER FIND NO. 7.
4. PARTIAL REF DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH UNIT NO. AND ASSY DESIGNATION.

40M08383

PL ISSUED

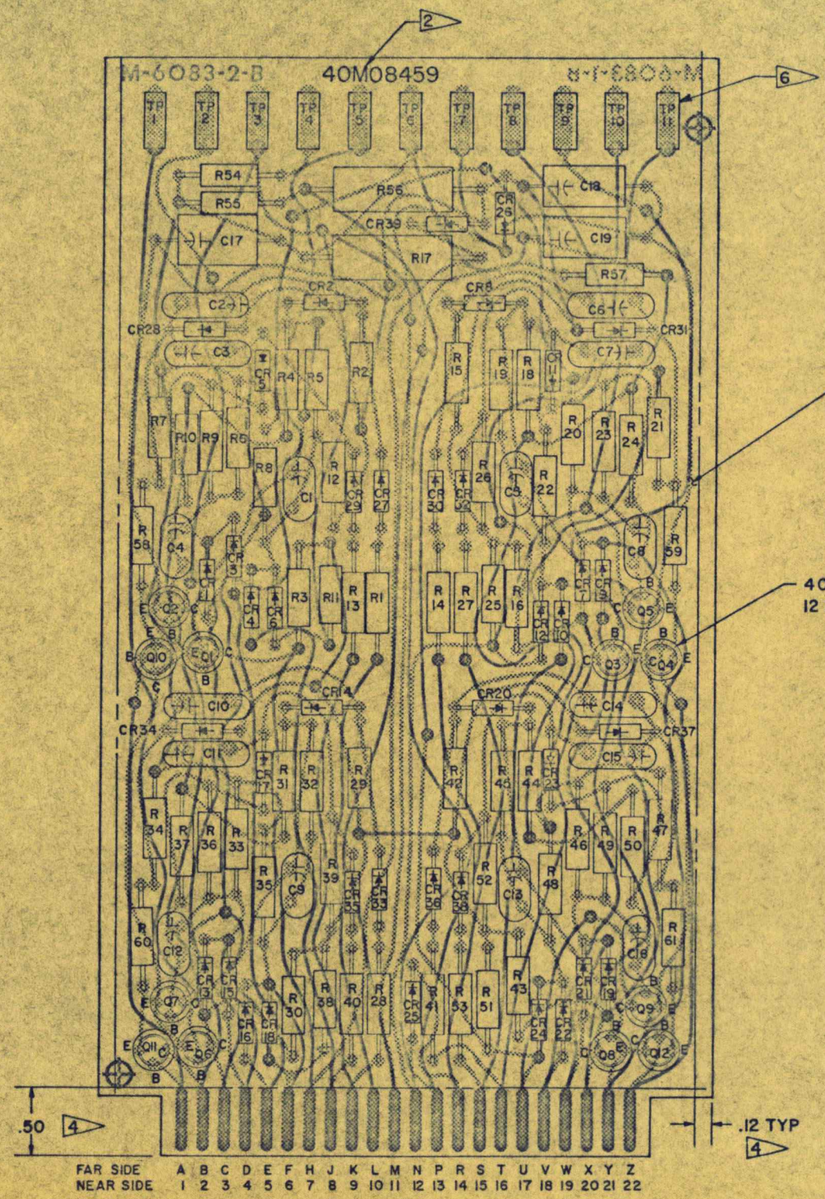
V1015
P5F

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING AUG 31, 1965; DRAFTSMAN HECH; CHECKER; STRESS; ENGINEER; SUBMITTED; APPROVED; DIRECTOR	CONTROLLED OSCILLATOR ASSY COUNT CLOCK TYPE I, SATURN V	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
40M08305 SATURN			WEIGHT CHECKER; DATE; CODE	DWG SIZE D — 40M08383
NEXT ASSY / USED ON			SCALE 1/1; UNIT WEIGHT	SHEET 1 OF 1
APPLICATION				

11 5P

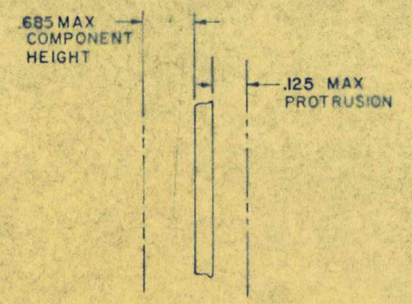
NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INCORP ECO 1P-252	12/5/69	
	B	INCORP ECO 1P-253	11-16-69	



40M08458
(M-6083-B)

40M00445
12 PLACES



PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-224 OR NPC200-4.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATIONS PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION.

40M08459 A

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS XX ±.03, ANGLES	ORIGINAL DATE OF DRAWING APR 28, 1965	ASSEMBLY, M-6083-B FLIP FLOP STANDARD
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH 3	APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE 2/1; UNIT WEIGHT; SHEET 1 OF 3

PID

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE ALABAMA

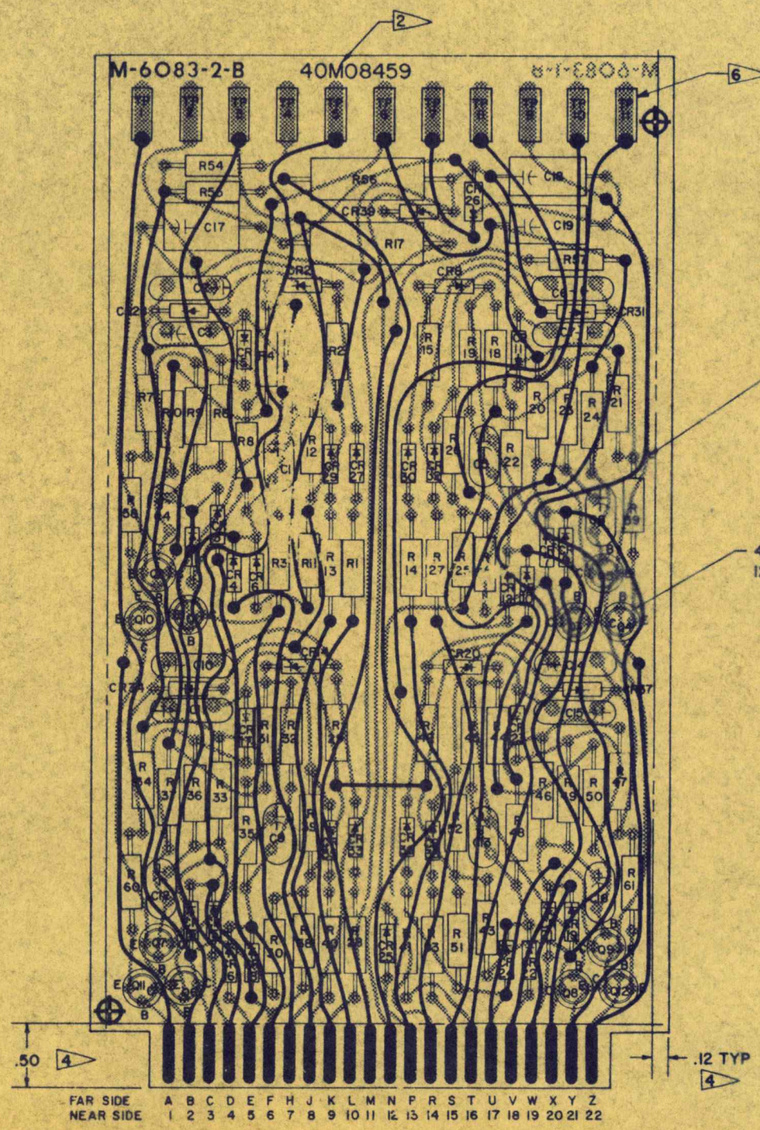
DWG SIZE D 40M08459

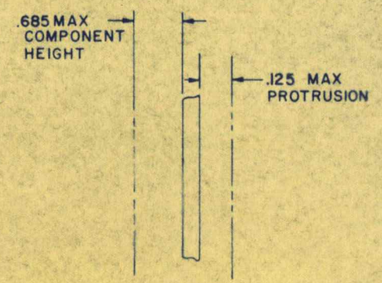
5/4/65 IP

MSFC FORM 482-D (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P 20.5P-71	8-25-65	
		B	INCORP EO 1P-253	11-16-66	
		1	RETRACED WITHOUT CHANGE	1-31-67	





PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-224 OR NPC 200-4
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATIONS PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION.

40M08459

1

X 00-30-00.00
I 00-30-00.00
P90

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS XX ±.03, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH 3	ORIGINAL DATE OF DRAWING APR 28 1965; APPROVED; DIRECTOR	ASSEMBLY, M-6083-B FLIP FLOP STANDARD; WEIGHT CHECKED; DATE; CODE; SCALE 2/1; UNIT WEIGHT	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA; DWG SIZE D; 40M08459; SHEET 1 OF 3
NEXT ASSY / USED ON APPLICATION				

5/1/67 9P 20

COPYMATION, INC 101-7

Change Date
26 June 1967

MSFC FORM 433-3 (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO SP-20	2/25/65	[illegible]
		B	SEE SHEET 1		

FLIP-FLOP 1

FLIP-FLOP 2

Q10 2N2501 · R7 1.47KΩ · R58 100Ω · R1 511Ω · CR27 SIN916B · R2 3.48KΩ · CR2 SIN916B · C2 1200 UUF · CR28 SIN916B · C3 1200 UUF · CR5 SIN916B · R12 3.48K · CR29 SIN916B · R13 511Ω

Q4 2N2501 · R21 1.47KΩ · R59 100Ω · R14 511Ω · CR30 SIN916B · R15 3.48KΩ · CR8 SIN916B · C6 1200 UUF · CR31 SIN916B · C7 1200 UUF · CR11 SIN916B · R26 3.48KΩ · CR32 SIN916B · R27 511Ω

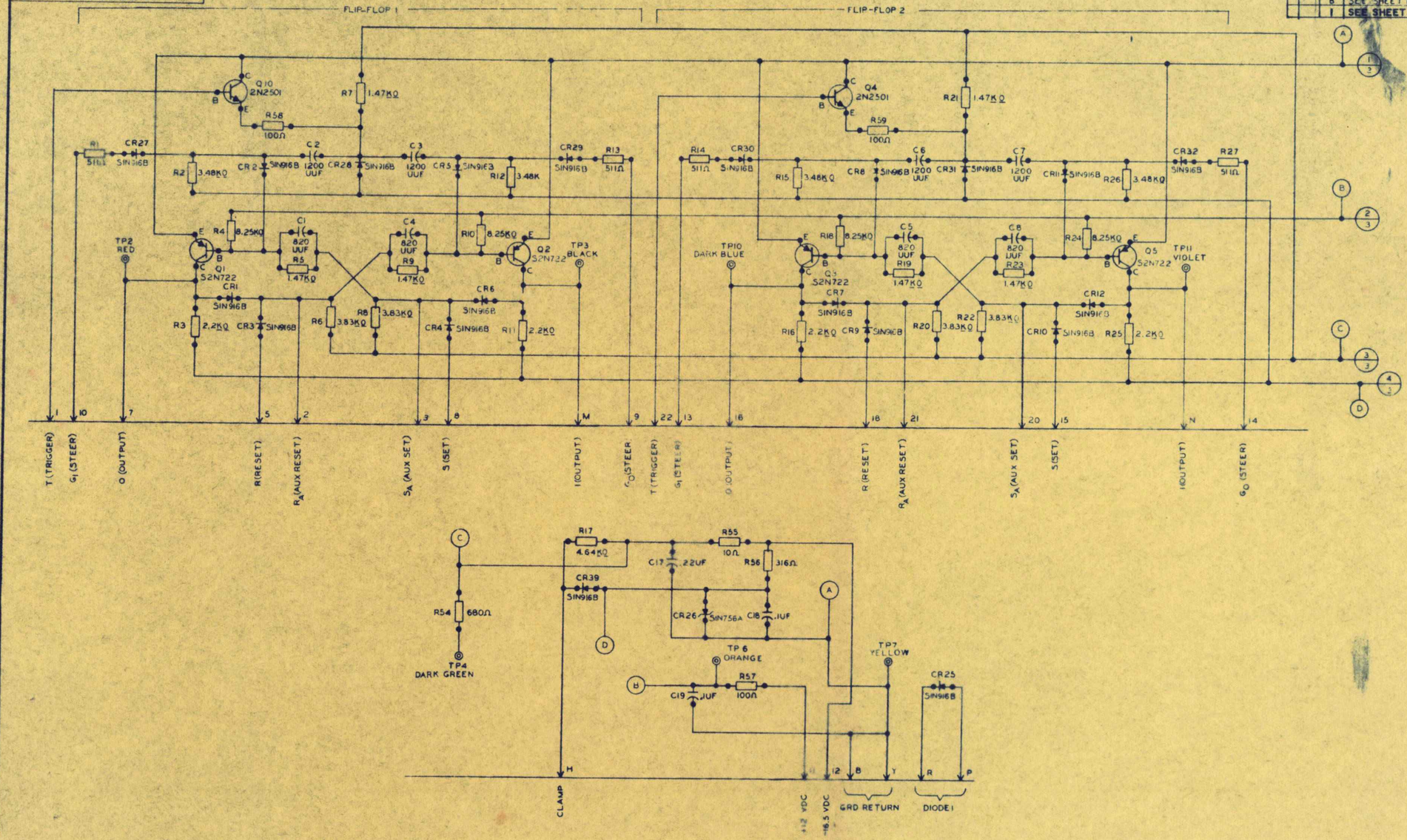
TP2 RED · R4 8.25KΩ · C1 820 UUF · R5 1.47KΩ · C4 820 UUF · R9 1.47KΩ · R10 8.25KΩ · Q2 S2N722 · TP3 BLACK · Q1 S2N722 · CR1 SIN916B · R3 2.2KΩ · CR3 SIN916B · R6 3.83KΩ · R8 3.83KΩ · CR6 SIN916B · CR4 SIN916B · R11 2.2KΩ

TP10 DARK BLUE · R18 8.25KΩ · C5 820 UUF · R19 1.47KΩ · C8 820 UUF · R23 1.47KΩ · R24 8.25KΩ · Q5 S2N722 · TP11 VIOLET · Q3 S2N722 · CR7 SIN916B · R16 2.2KΩ · CR9 SIN916B · R20 3.83KΩ · R22 3.83KΩ · CR12 SIN916B · CR10 SIN916B · R25 2.2KΩ

| | | |

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	PER ECO SP-20	2/5/65	[illegible]
	B	SEE SHEET 1		
	1	SEE SHEET 1		



40M08459
1

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING MAR 22 1965	ASSEMBLY, M-6083-B FLIP FLOP STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
NEXT ASSY / USED ON	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED / DIRECTOR	WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT	Dwg Size D	40M08459
APPLICATION				SHEET 2 OF 3	

Change Date
26 June 1967

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INC ECO SP-20	8-25-65	

FLIP-FLOP 3

FLIP FLOP 4

Q11 2N2501 · Q12 2N2501 · Q6 S2N722 · Q7 S2N722 · Q8 S2N722 · Q9 S2N722

R28 511Ω · R29 3.48KΩ · R30 2.2KΩ · R31 8.25KΩ · R32 1.47KΩ · R33 383Ω · R34 1.47KΩ · R35 383Ω · R36 1.47KΩ · R37 8.25KΩ · R38 2.2KΩ · R39 3.48KΩ · R40 511Ω · R41 511Ω · R42 3.48KΩ · R43 2.2KΩ · R44 8.25KΩ · R45 1.47KΩ · R46 383Ω · R47 1.47KΩ · R48 383Ω · R49 1.47KΩ · R50 8.25KΩ · R51 2.2KΩ · R52 3.48KΩ · R53 511Ω · R60 100Ω · R61 100Ω

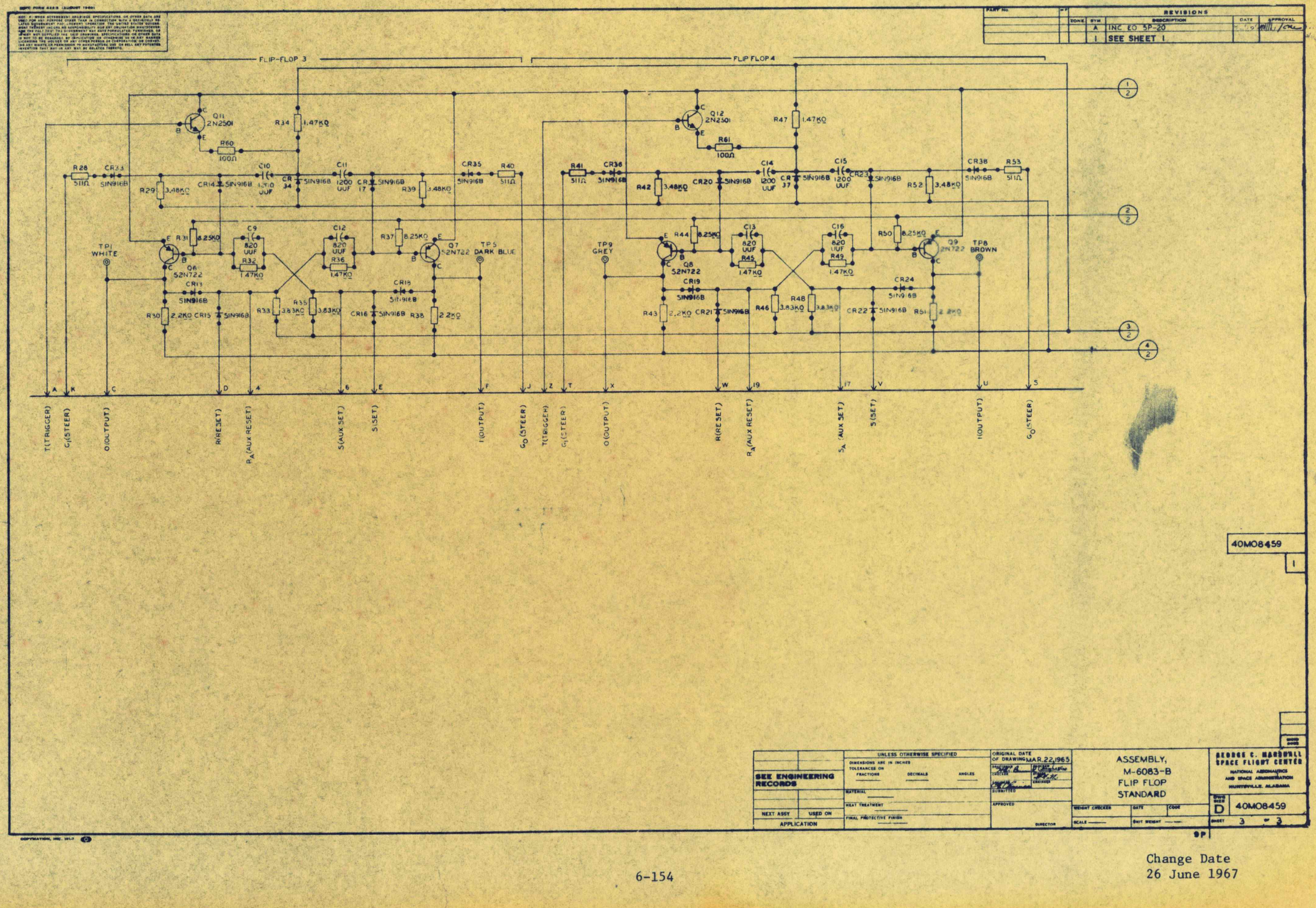
C9 820 UUF · C10 1200 UUF · C11 1200 UUF · C12 820 UUF · C13 820 UUF · C14 1200 UUF · C15 1200 UUF · C16 820 UUF

CR13 SIN916B · CR14 SIN916B · CR15 SIN916B · CR16 SIN916B · CR17 SIN916B · CR18 SIN916B · CR19 SIN916B · CR20 SIN916B · CR21 SIN916B · CR22 SIN916B · CR23 SIN916B · CR24 SIN916B · CR33 SIN916B · CR34 SIN916B · CR35 SIN916B · CR36 SIN916B · CR37 SIN916B · CR38 SIN916B

TP1 WHITE · TP5 DARK BLUE · TP9 GRE · TP8 BROWN

T(TRIGGER) · G_1(STEER) · O(OUTPUT) · R(RESET) · R_A(AUX RESET) · S(AUX SET) · S(SET) · I(OUTPUT) · G_0(STEER) · T(TRIGGER) · Φ_1(STEER) · O(OUTPUT) · R(RESET) · R_A(AUX RESET) · S_A(AUX SET) · S(SET) · I(OUTPUT) · G_0(STEER)

1 · 0 · 1 · 1 · 1



PART NO.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5P-20		
		1	SEE SHEET 1		

40M08459
1

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAR 22 1965; DRAFTSMAN; CHECKED; ENGINEER; SUBMITTED; APPROVED; DIRECTOR	ASSEMBLY, M-6083-B FLIP FLOP STANDARD
NEXT ASSY / USED ON / APPLICATION			WEIGHT CHECKED / DATE / CODE; SCALE; UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

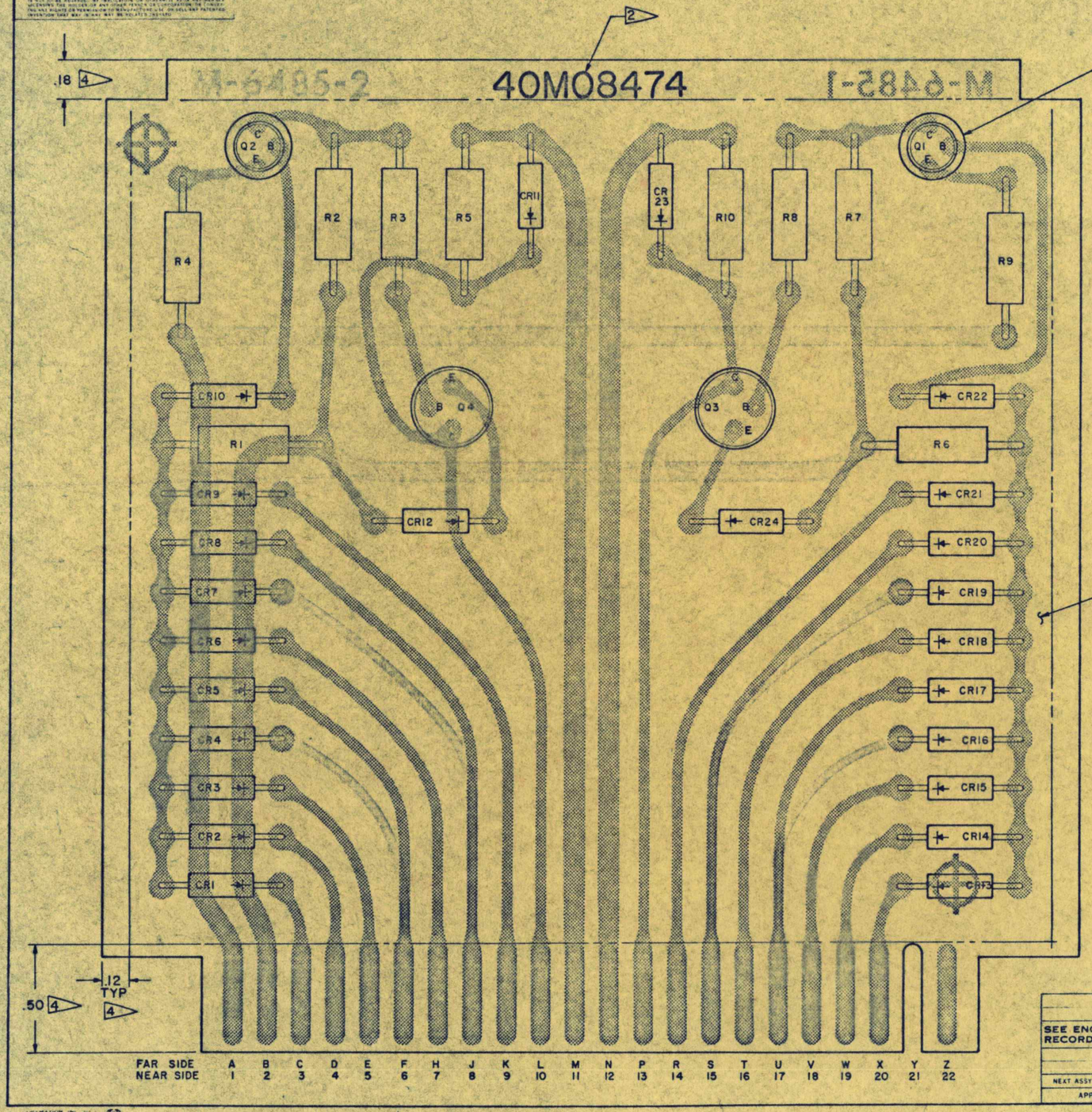
SIZE D | 40M08459 | SHEET 3 OF 3

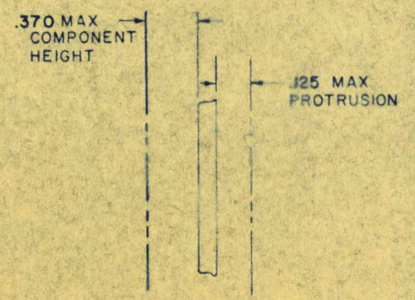
Change Date
26 June 1967

MSFC FORM 433-3 (AUGUST 1960)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED, BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	M.F.	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
			A	SHEET 2 WAS SHEET 1 OF 2	8-3-65	
			B	INCORP EO 5P-73	10-28-65	





PARTIAL VIEW
SCALE. NONE

40M08473
(M-6485)

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC 200-4 OR MSFC-PROC-224.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
6. SOLDER COMPONENT LEADS ON BOTH SIDES OF THE BOARD WHERE APPLICABLE.

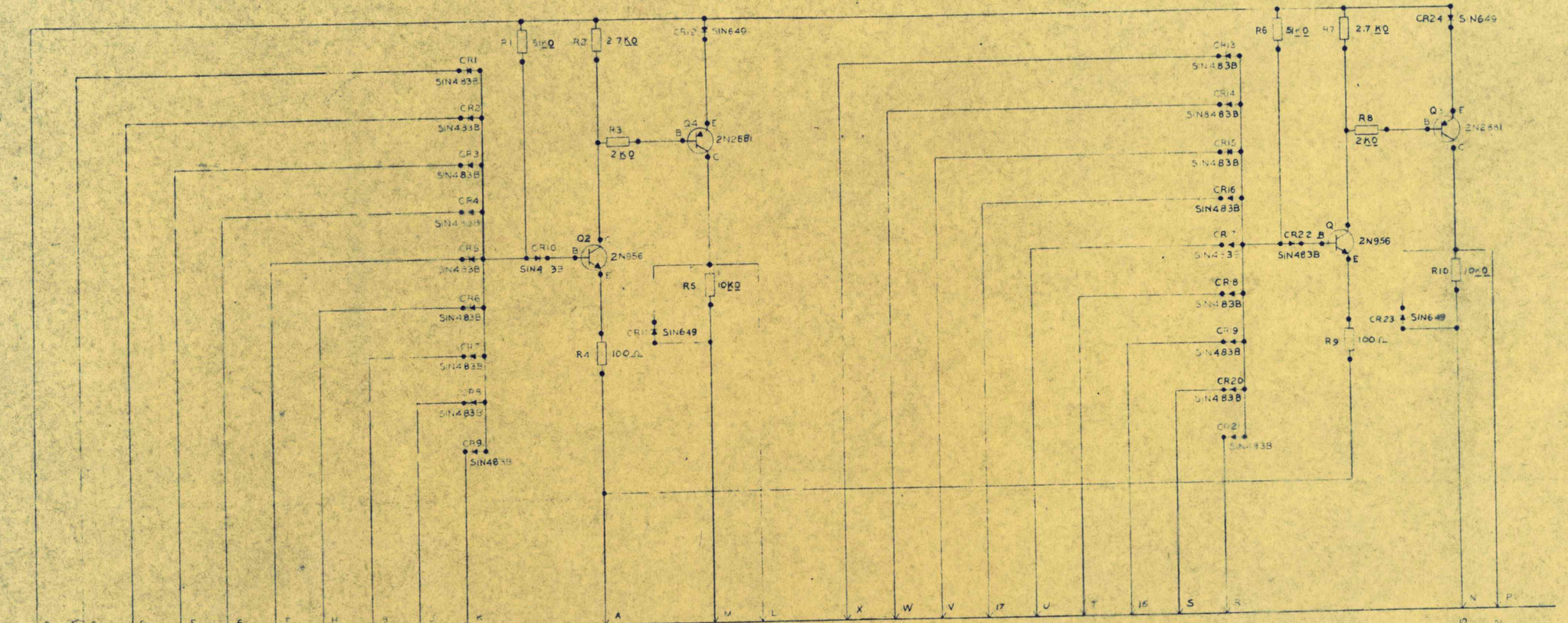
40M08474

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING MAR 31,1965	ASSEMBLY, M-6485 TIME OUTPUT COMMAND STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	PID
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH 3	APPROVED; DIRECTOR	WEIGHT CHECKER / DATE / CODE; SCALE 4/1; UNIT WEIGHT	DWG SIZE D	40M08474
				SHEET 1 OF 2	

IP

NORTH AMERICAN AVIATION, INC. SPECIFICATIONS OR OTHER DATA ARE NOT TO BE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION. THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE APPROVAL
		A	SEE SHEET 1	8-3-65



40M08474

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING: 4-21-1965	ASSEMBLY M-6435 TIME OUTPUT COMMAND STANDARD
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED; DIRECTOR	WEIGHT CHECKED / DATE / CODE; STRESS / UNIT WT OUT

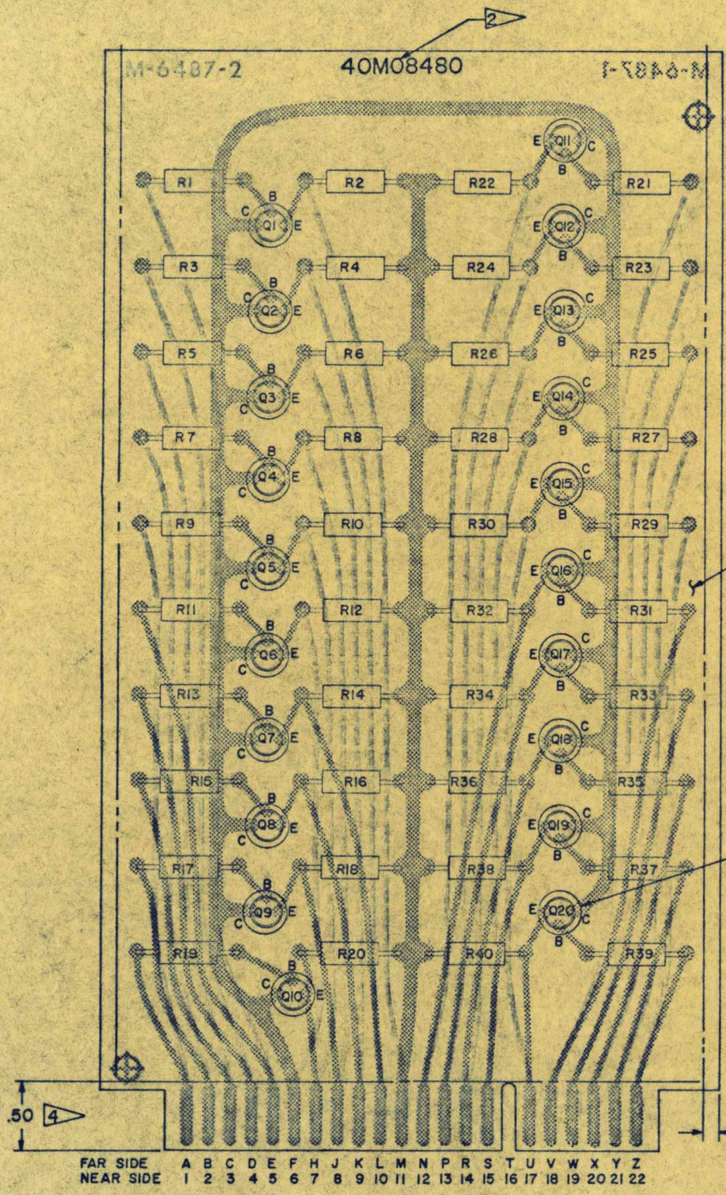
GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

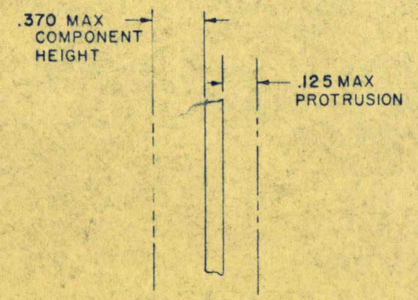
SIZE D — 40M08474 — SHEET 2

5/3/65

COPYMATION, INC. 1812

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	ING EO 59-72	2-3-65	





PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-224 OR NPC200-4.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH UNIT NO. AND ASSEMBLY DESIGNATION.

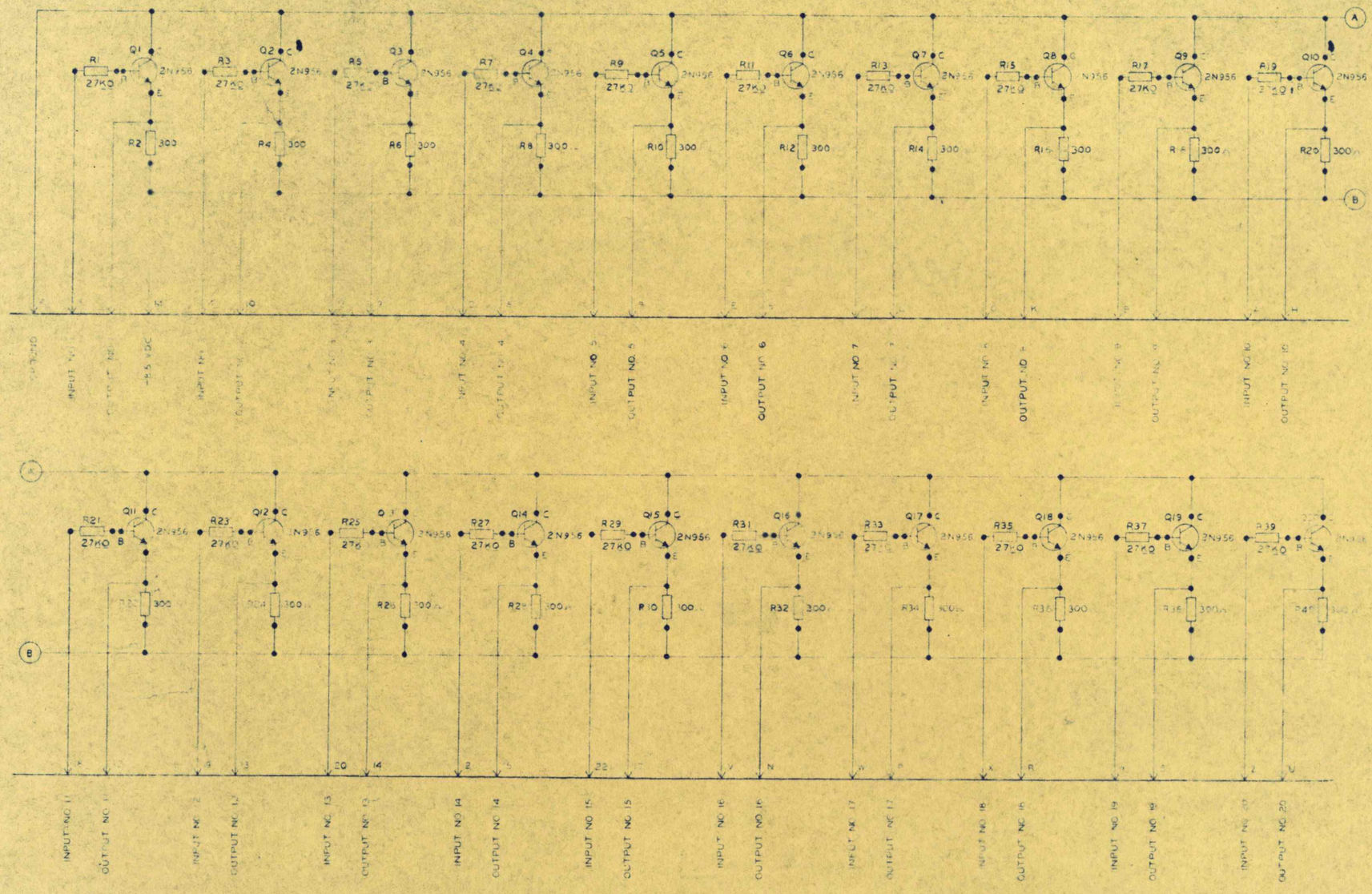
40M08480 A

7.12.31 PID

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES: XX ± .03	ORIGINAL DATE OF DRAWING: APR 6, 1965	ASSEMBLY, M-6487 LEVEL CHANGER STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON: APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH 3	APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE 2/1; SHT WEIGHT	DWG SIZE D; 40M08480; SHEET 1 OF 2

5/9/66 IP

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	CHANGE LEVEL 1	1-13-69	ECR



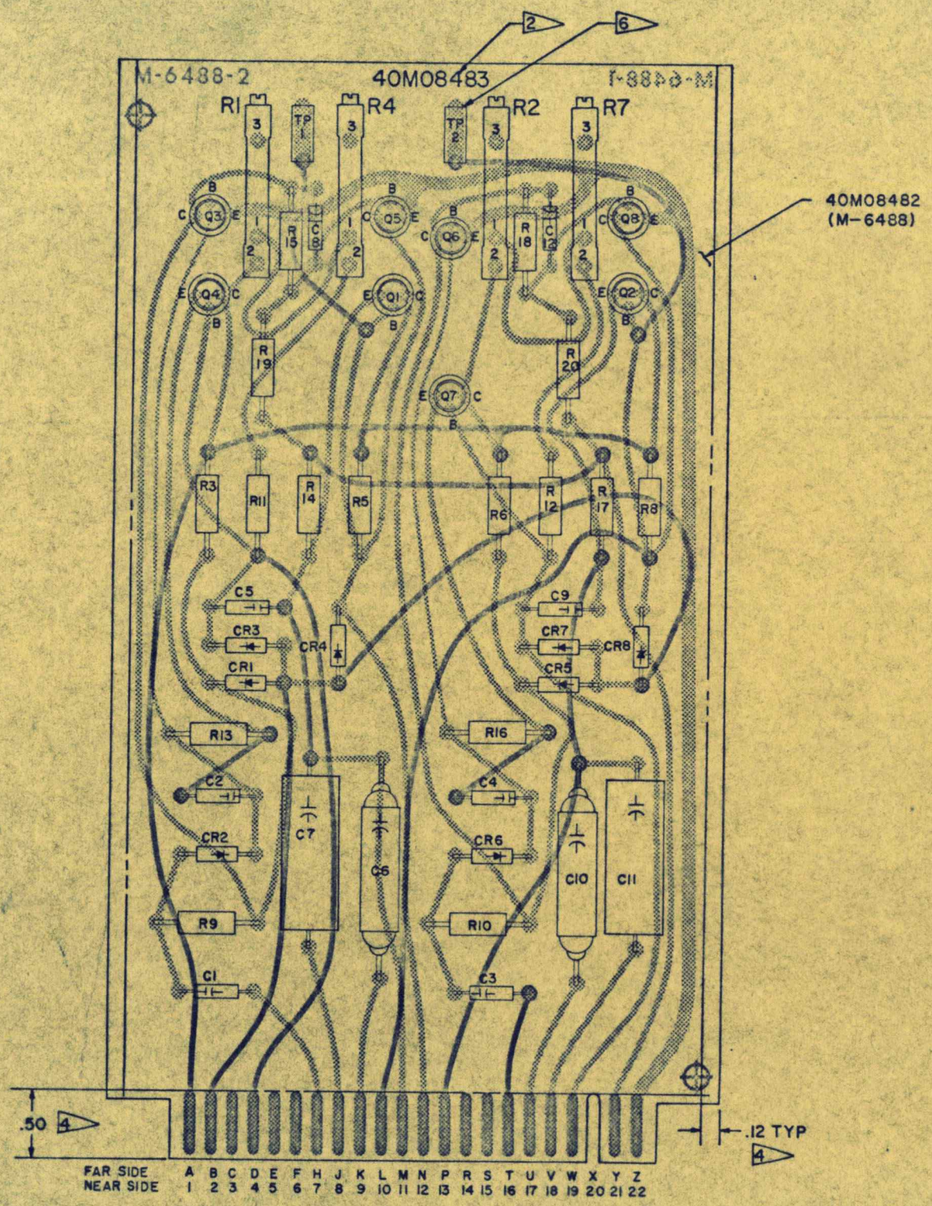
40M08480

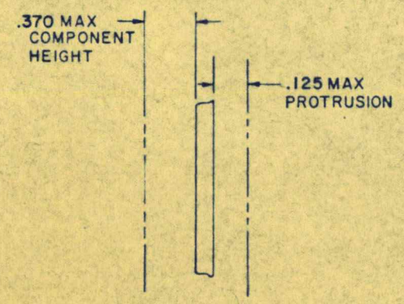
SEE ENGINEERING RECORDS	ASSEMBLY M-6487 LEVEL CHANGER STANDARD
NEXT ASSY / USED ON / APPLICATION	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
	SIZE D — 40M08480 — REV E

MSFC FORM 433-3 (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.		REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INCORP EO 5P-89	10-29-65	





PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC 200-4 OR MSFC-PROC-224.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
6. ALL TEST JACKS SHALL BE FREE OF CONFORMAL COATING.
7. SOLDER COMPONENT LEADS AND JUMPERS ON BOTH SIDES OF THE BOARD WHERE APPLICABLE.

40M08483

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS .XX±.03, ANGLES	ORIGINAL DATE OF DRAWING APR 27, 1965	ASSEMBLY, M-6488 ONE SHOT STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE ALABAMA	
NEXT ASSY / USED ON	MATERIAL / HEAT TREATMENT / FINAL PROTECTIVE FINISH 3	APPROVED / DIRECTOR	WEIGHT CHECKED / DATE / CODE	SIZE D	40M08483
APPLICATION			SCALE 2/1 / UNIT WEIGHT	SHEET 1 OF 2	

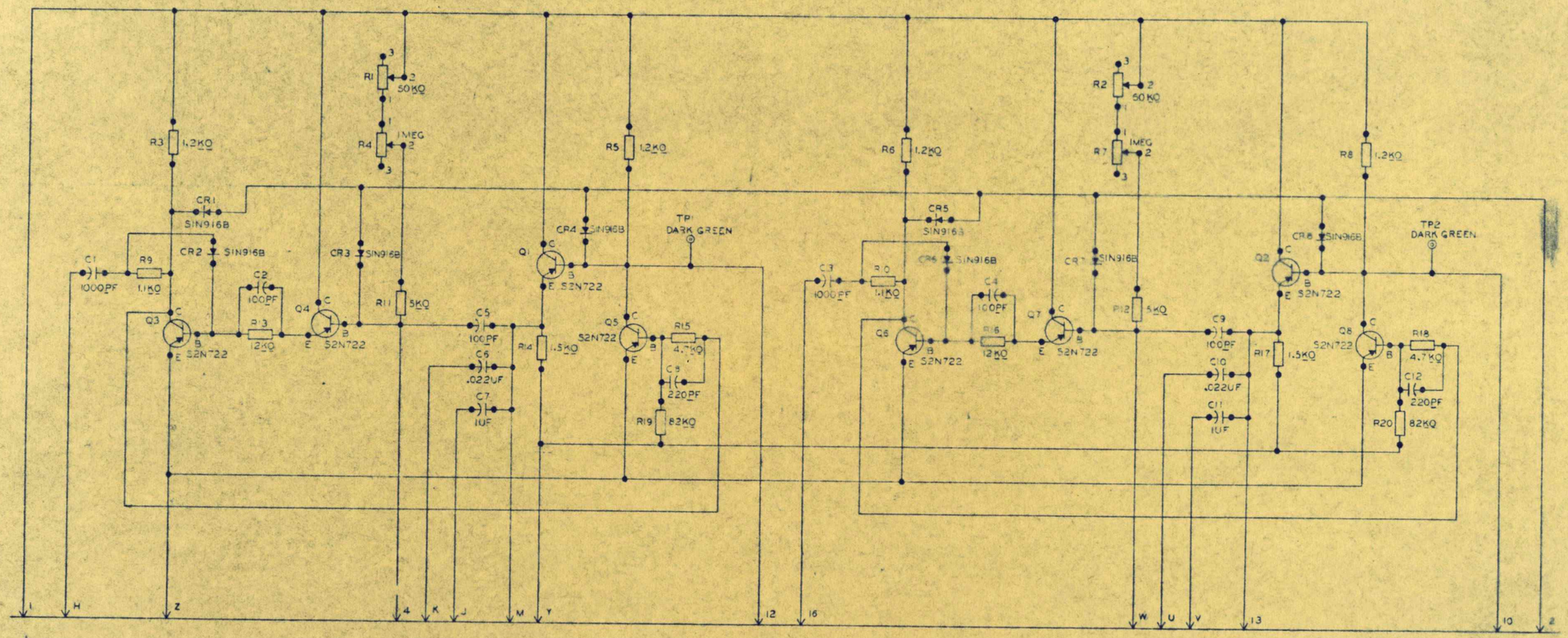
X 12.31
PID

5/6/65 IP

MSFC FORM 433-5 (AUGUST 1980)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M08483

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING FEB 24 '64; DRAFTSMAN; CHECKED; ENGINEER; APPROVED; DIRECTOR	ASSEMBLY, M-6488 ONE SHOT STANDARD
NEXT ASSY / USED ON; APPLICATION			WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT

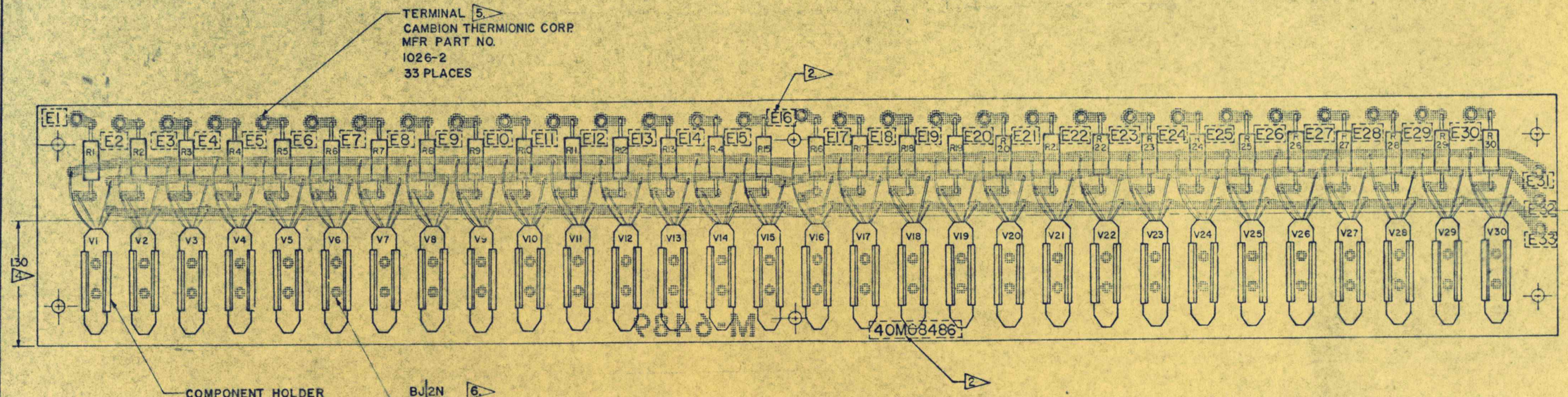
GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40M08483 — SHEET 2 OF 2

W.A.2.31 PID DRTR CODE

COPYMATION, INC. 161-7

PART NO.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL


TERMINAL 5.
CAMBION THERMIONIC CORP.
MFR PART NO.
1026-2
33 PLACES
2
E1 E2 E3 E4 E5 E6 E7 E8 E9 E10 E11 E12 E13 E14 E15 E16 E17 E18 E19 E20 E21 E22 E23 E24 E25 E26 E27 E28 E29 E30
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 R20 R21 R22 R23 R24 R25 R26 R27 R28 R29 R30
E31
E32
E33
V1 V2 V3 V4 V5 V6 V7 V8 V9 V10 V11 V12 V13 V14 V15 V16 V17 V18 V19 V20 V21 V22 V23 V24 V25 V26 V27 V28 V29 V30
1.30
R&A-M
40M08486
2
COMPONENT HOLDER
MASTERITE IND
MFR PART NO.
20213-10
30 PLACES
BJ2N/3 6.
WASHER, AN960PD3L FAR SIDE
60 PLACES
.280 MAX
COMPONENT
HEIGHT
.242 MAX
PROTRUSION
PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-158.
2. STAMP PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293, COATING TO BE APPLIED BY SPRAY PROCESS.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD, 40M08486
5. INSTALL TERMINALS FROM PRINTED CIRCUIT SIDE PER MSFC-PROC-274.
6. RIVET PER MSFC-STD-156.

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS; DECIMALS .XX ± .03; ANGLES	ORIGINAL DATE OF DRAWING APR 20 1965	ASSEMBLY, M-6489 INDICATOR BOARD STANDARD
NEXT ASSY / USED ON APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH 3	APPROVED; DIRECTOR	WEIGHT CHECKER; SCALE 2/1; DATE; CODE; UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

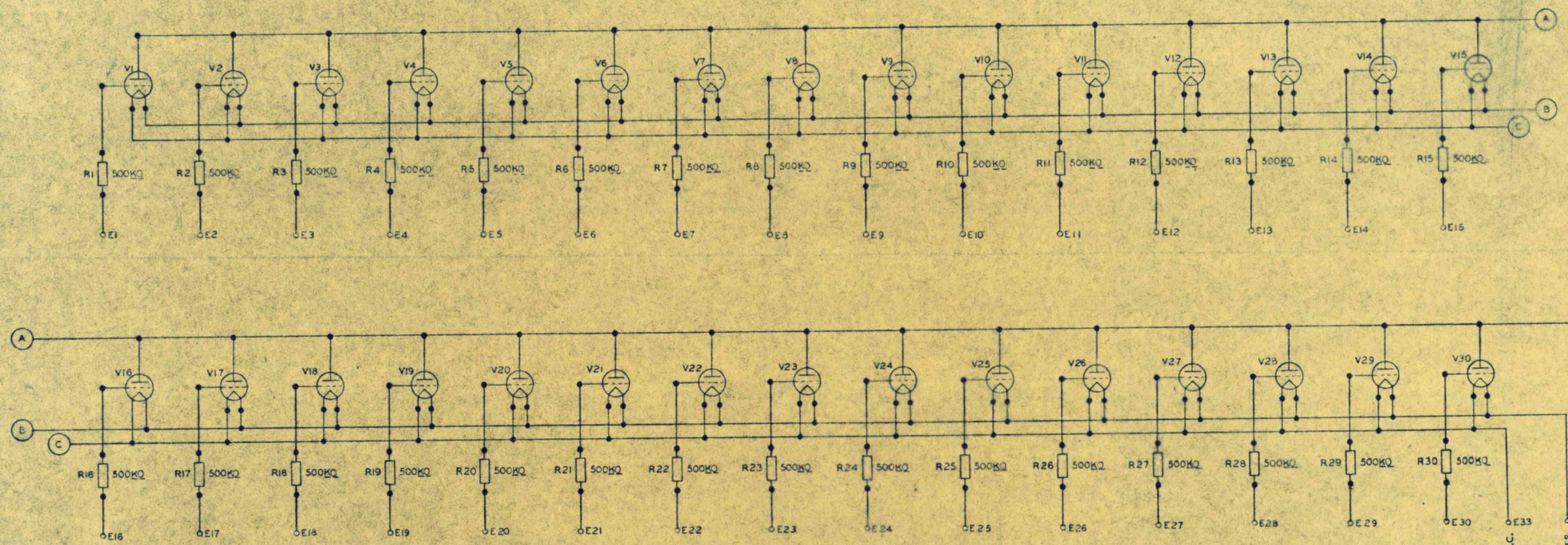
PID

DWG SIZE D — 40M08486 — SHEET 1 OF 2

9/24/65 IP

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	REF. ZONE	REF. SYM	REVISIONS DESCRIPTION	DATE	APPROVAL



40M08486

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS ___ DECIMALS ___ ANGLES ___	ORIGINAL DATE OF DRAWING MAR 17, 1965	ASSEMBLY, M-6489 INDICATOR BOARD STANDARD
NEXT ASSY / USED ON	MATERIAL ___ HEAT TREATMENT ___ FINAL PROTECTIVE FINISH ___	APPROVED ___ DIRECTOR	WEIGHT CHECKED ___ DATE ___ CODE ___ SCALE ___ UNIT WEIGHT ___
APPLICATION			SHEET 2 OF 2

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE ALABAMA

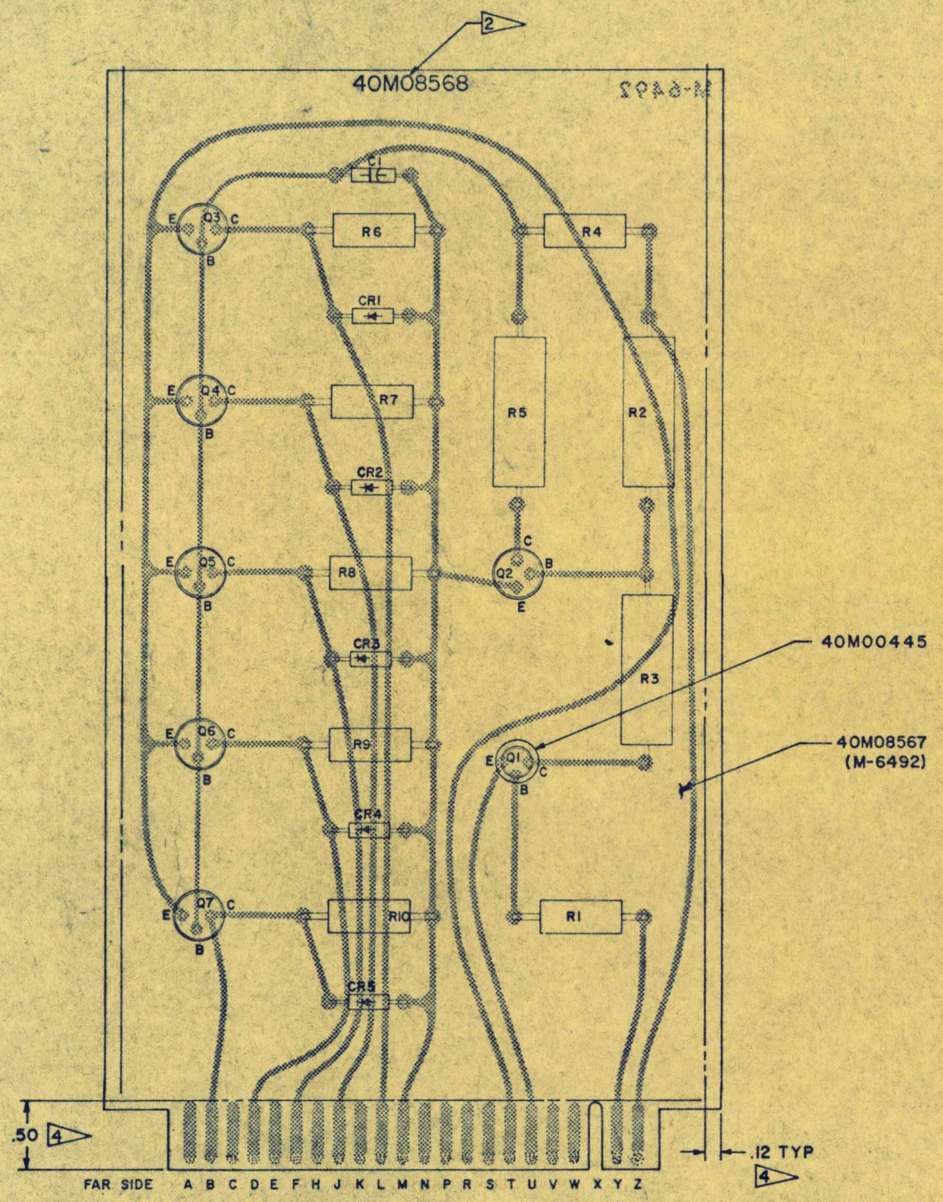
DWG SIZE D — 40M08486

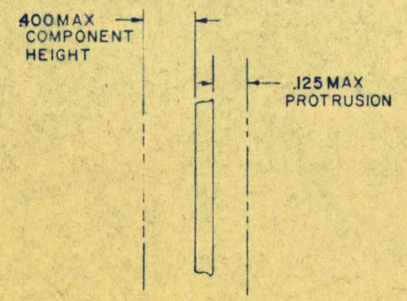
5/3/65 IP

NMFC FORM 422-S (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT (INCLUDING GOVERNMENTAL RIGHTS AND OBLIGATIONS NOTWITHSTANDING ANY FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	INCORP EO 5P-43	9-21-65	





PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC 200-4 OR MSFC-PROC-224.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.

40M08568 A

X.12.31
PID

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS .XX ±.03, ANGLES	ORIGINAL DATE OF DRAWING APR 8, 1965	ASSEMBLY, M-6492 I.P.P.S. GENERATOR STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH 3	APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE 2/1; UNIT WEIGHT	SIZE D; 40M08568; SHEET 1 OF 2

5/1/65 IP 19

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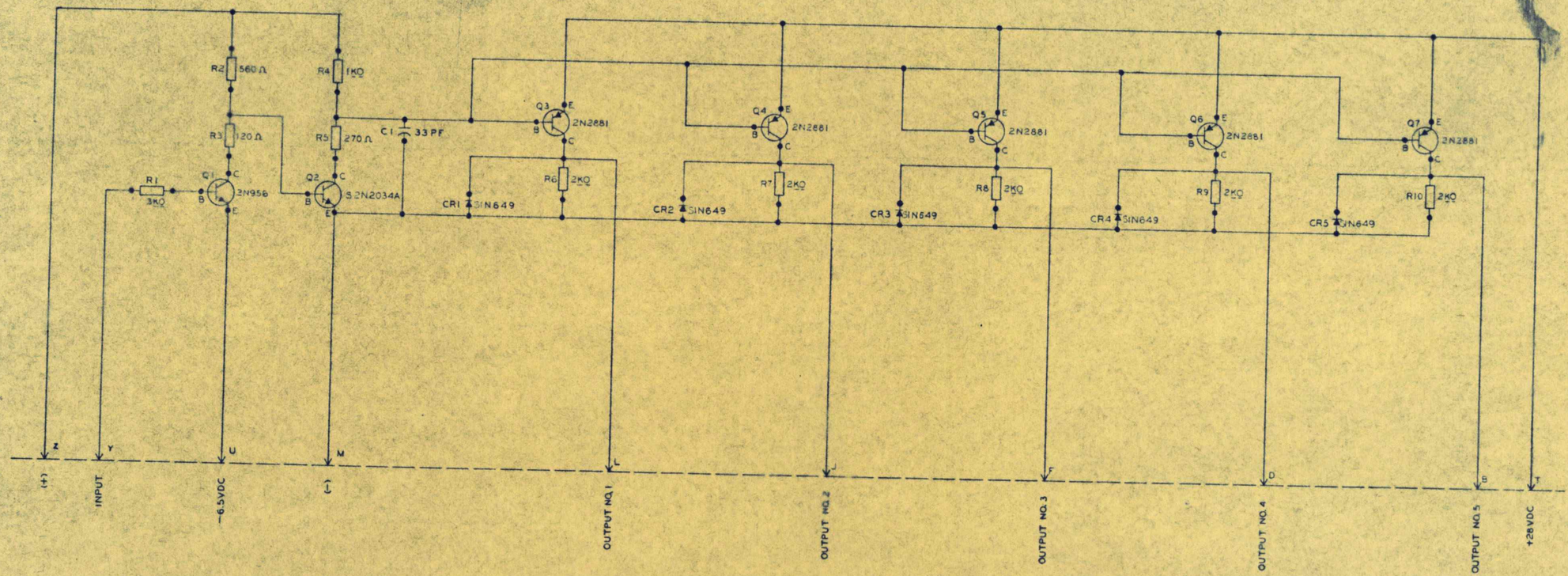
MSFC FORM 432-S (AUGUST 1960)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FURNISHED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	WT	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M08568

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING MAR 10 1965	ASSEMBLY, M-6492 IPPS GENERATOR STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	M 12.31 PID
NEXT ASSY / USED ON	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED, DIRECTOR	WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT	DWG SIZE D — 40M08568	SHEET 2 OF 2
APPLICATION					

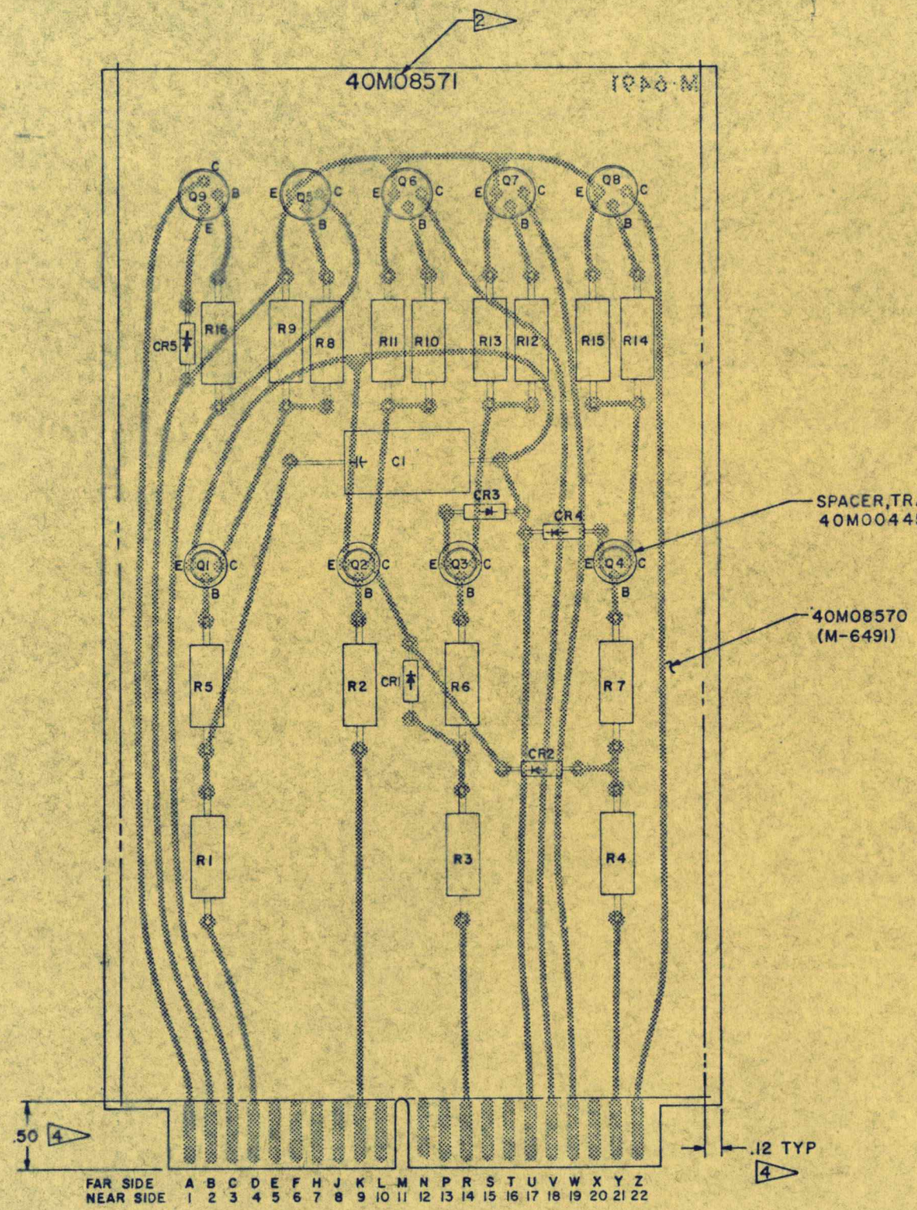
COPYMATION, INC. 101-7

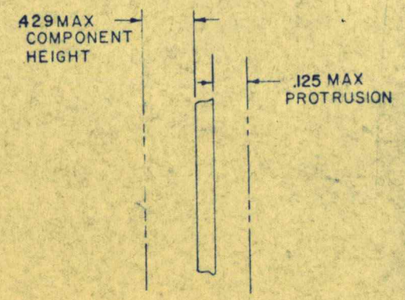
5/3/65 IP

MSFC FORM 422-9 (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	NEXT ASSY	REVISIONS ZONE	SYM	DESCRIPTION	DATE	APPROVAL
			A	INCORP EO 5P-59	10-29-65	
			B	INCORP EO 1P-259	10-29-65	





PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC 200-4 OR MSFC-PROC-224.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATIONS PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
6. SECURE COMPONENT, C1, TO BOARD PER MSFC-PROC-257.

40M08571

PID

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS; DECIMALS .XX±.03; ANGLES	ORIGINAL DATE OF DRAWING APR 6 1965	ASSEMBLY, M-6491 STATUS INDICATION BOARD STANDARD
NEXT ASSY / USED ON APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH 3	APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE 2/1; UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40M08571 — SHEET 1 of 2

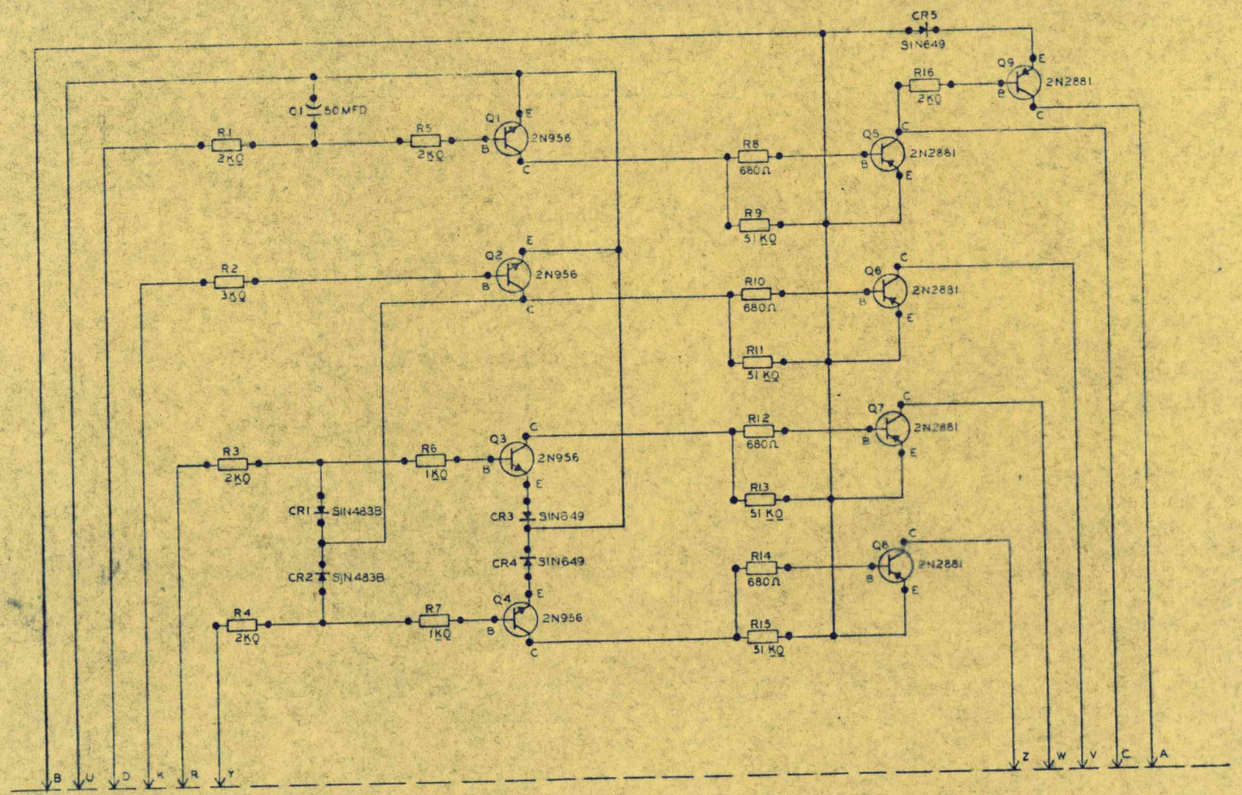
5/3/65 IP

COPYMATION, INC. 1964

MFG FORM 428-3 (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
		B	SEE SHEET 1		



40M08571

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING MAR 16,1965	ASSEMBLY, M-6491 STATUS INDICATION BOARD STANDARD
NEXT ASSY / USED ON APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED DIRECTOR	WEIGHT CHECKER, DATE, CODE; SCALE, UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

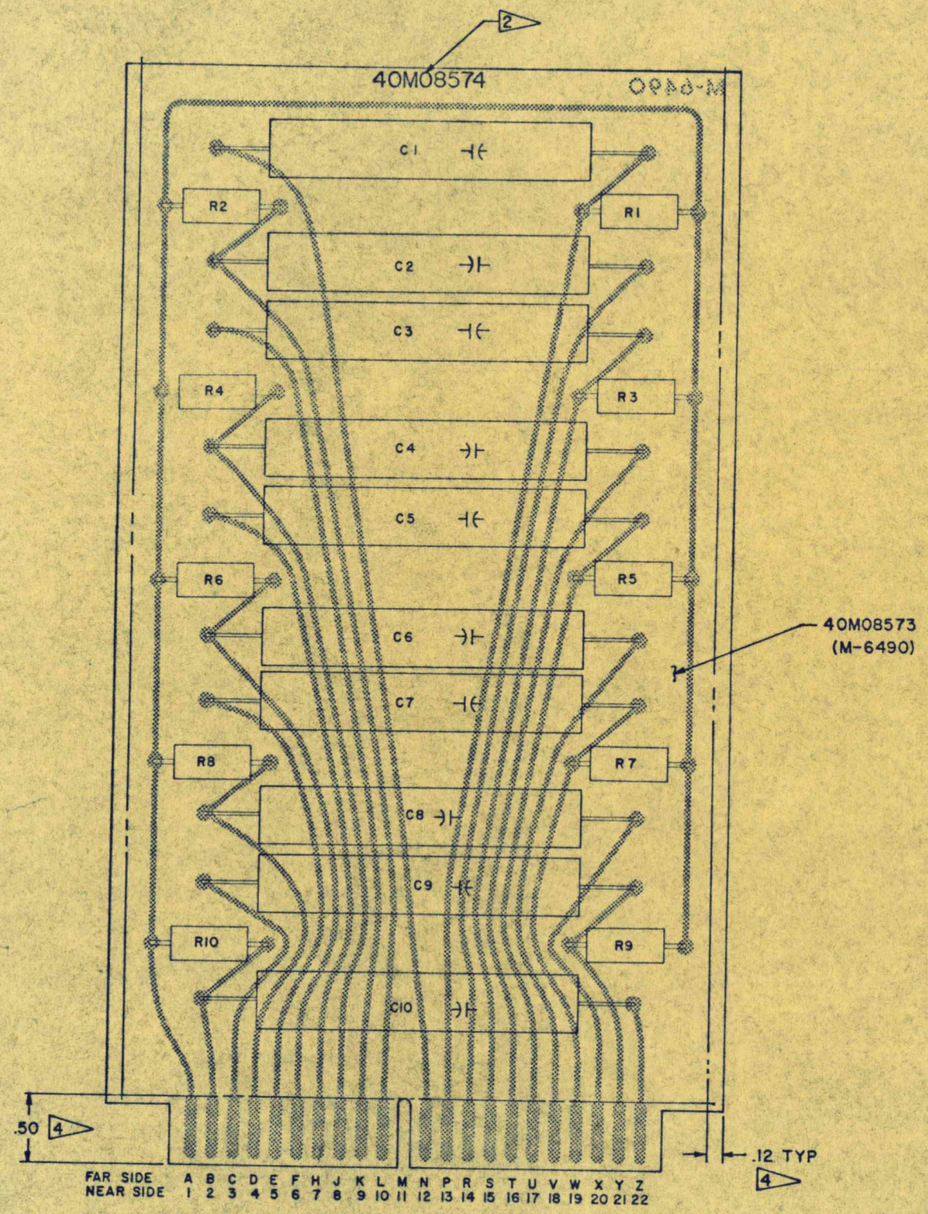
PID

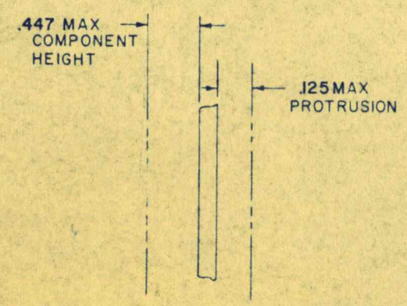
SIZE D — 40M08571 — SHEET 2 OF 2

5/3/65 IP

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED, BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INCORP EO 5P-60	11-16-65	





PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC 200-4 OR MSFC-PROC-224.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATIONS PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
6. SECURE COMPONENTS (C1-C10) TO BOARD PER MSFC-PROC-257.

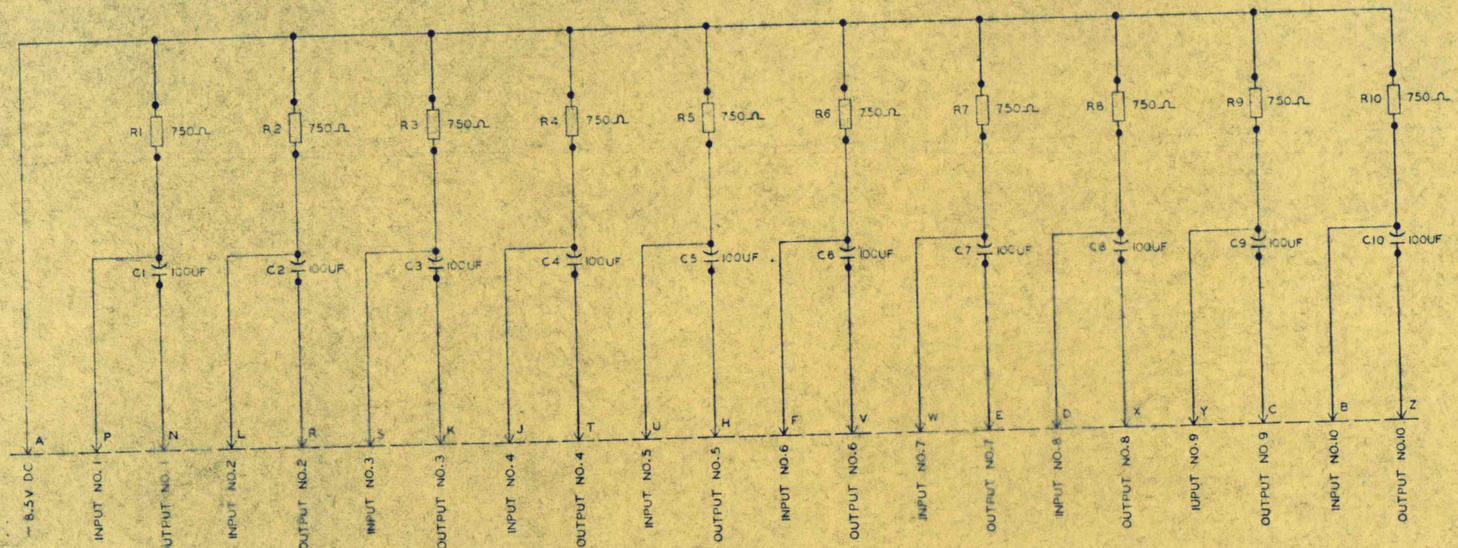
40M08574

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING APR 8, 1965	ASSEMBLY, M-6490 SYSTEMS LIFT OFF STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	PID
NEXT ASSY / USED ON	MATERIAL	APPROVED	WEIGHT CHECKER / DATE / CODE	DWG SIZE D	40M08574
APPLICATION	HEAT TREATMENT; FINAL PROTECTIVE FINISH 3	DIRECTOR	SCALE 4/1	UNIT WEIGHT	SHEET 1 OF 2

MSFC FORM 433-3 (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL



40M08574

P.I.D.

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING MAR 10 1965; DRAWN, CHECKED, ENGINEER, SUBMITTED, APPROVED, DIRECTOR	ASSEMBLY, M-6490, SYSTEMS LIFT OFF STANDARD
NEXT ASSY / USED ON / APPLICATION		WEIGHT CHECKED, DATE, CODE; SCALE, UNIT WEIGHT	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA; Dwg. Size D; 40M08574; SHEET 2 OF 2

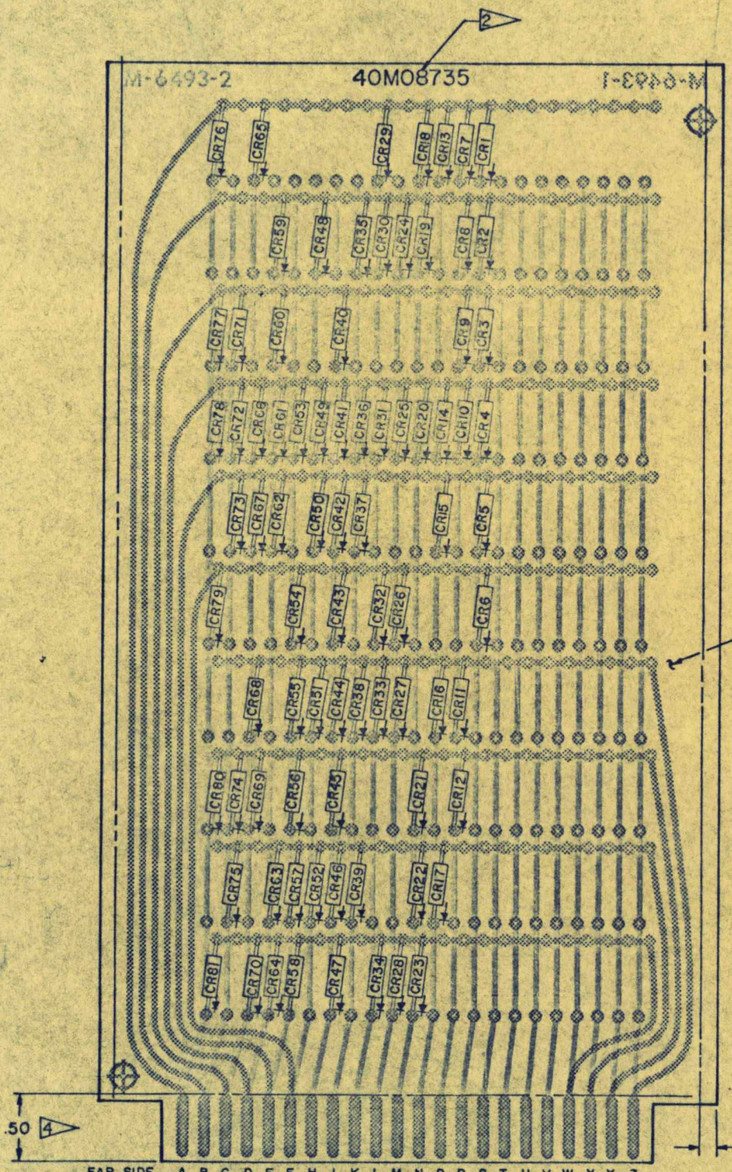
3/1/65 IP

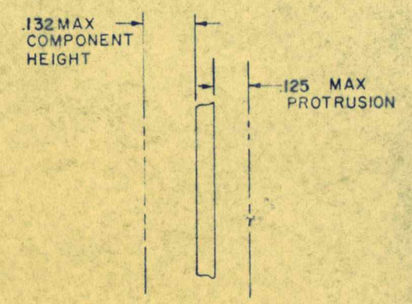
DUPLIMATION, INC. 101-7

MSFC FORM 482-B (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS					
PART No.	ZONE	SYM	DESCRIPTION	DATE	APPROVAL





PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-158.
2. STAMP PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293, COATING TO BE APPLIED BY SPRAY PROCESS.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD.
5. SOLDER COMPONENT LEADS ON BOTH SIDES OF THE BOARD WHERE APPLICABLE.

40M08735

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS .XX ±03, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH 3	ORIGINAL DATE OF DRAWING APR 15,1965; APPROVED; DIRECTOR	ASSEMBLY, M-6493 DIODE MATRIX STANDARD; WEIGHT CHECKER; DATE; CODE; SCALE 2/1; UNIT WEIGHT
NEXT ASSY USED ON APPLICATION			PID; DWG SIZE D; 40M08735; SHEET 1 OF 2

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

3/8/65 IP

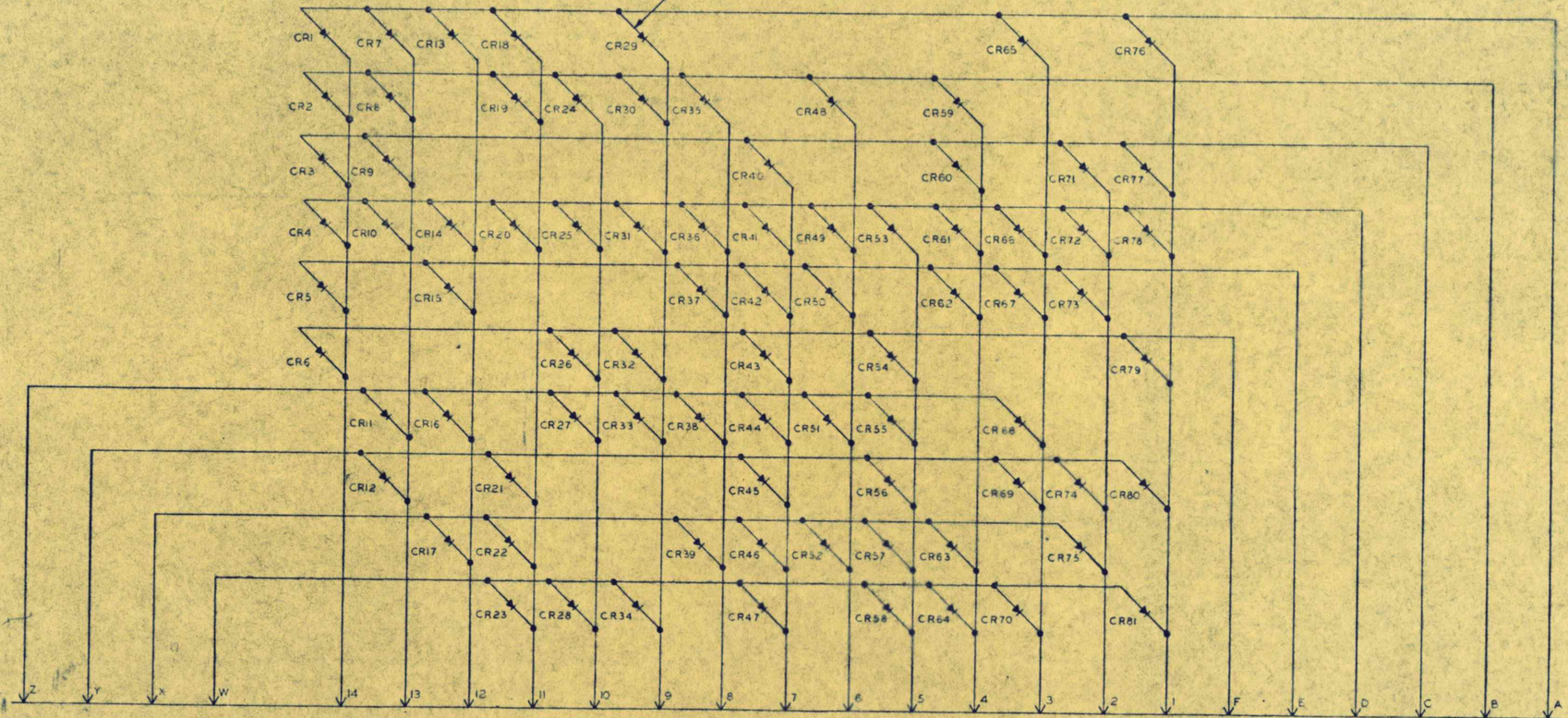
CORMATION, INC. 1965

MSFC FORM 422-3 (AUGUST 1960)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	W P	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL

SIN4838
(TYP ALL DIODES)



40M08735

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING FEB 26,1965	ASSEMBLY, M-6493 DIODE MATRIX	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKER DESIGN ENGINEER	STANDARD	
		MATERIAL	SUBMITTED		
		HEAT TREATMENT	APPROVED	WEIGHT CHECKER DATE CODE	SIZE D 40M08735
NEXT ASSY USED ON		FINAL PROTECTIVE FINISH	DIRECTOR	SCALE UNIT WEIGHT	SHEET 2 OF 2
APPLICATION					

P.D. DATE CODE

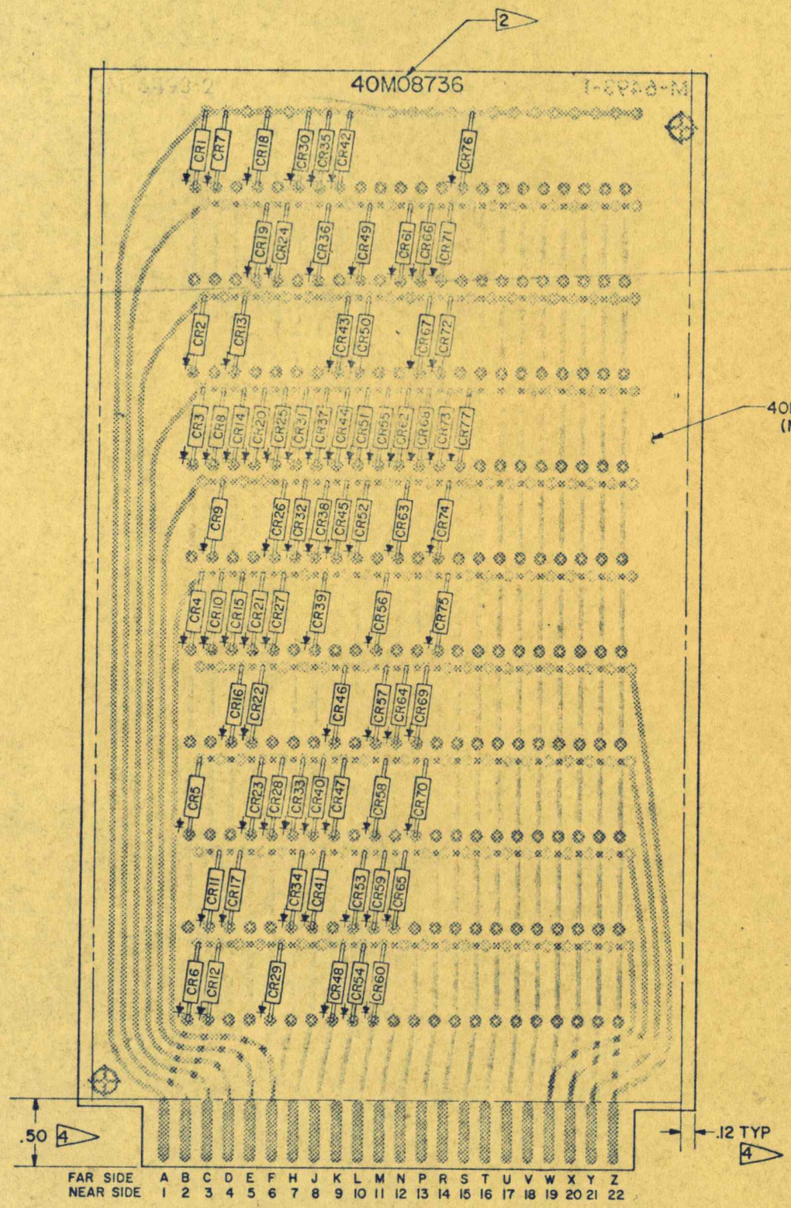
5/3/65 IP

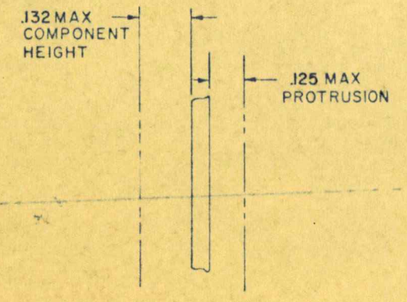
COPYMATION, INC. 101-7

MSFC FORM 482 S (AUGUST 1963)

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO	M*	REVISIONS			
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL





PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-158.
2. STAMP PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293, COATING TO BE APPLIED BY SPRAY PROCESS.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD.
5. SOLDER COMPONENT LEADS ON BOTH SIDES OF THE BOARD WHERE APPLICABLE.

40M08736

E.O.
PID

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS .XX ± .03 / ANGLES	ORIGINAL DATE OF DRAWING APR 30, 1965	ASSEMBLY, M-6493 DIODE MATRIX STANDARD
NEXT ASSY / USED ON APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH 3	APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE 2/1; UNIT WEIGHT; SHEET 1 OF 2

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40M08736

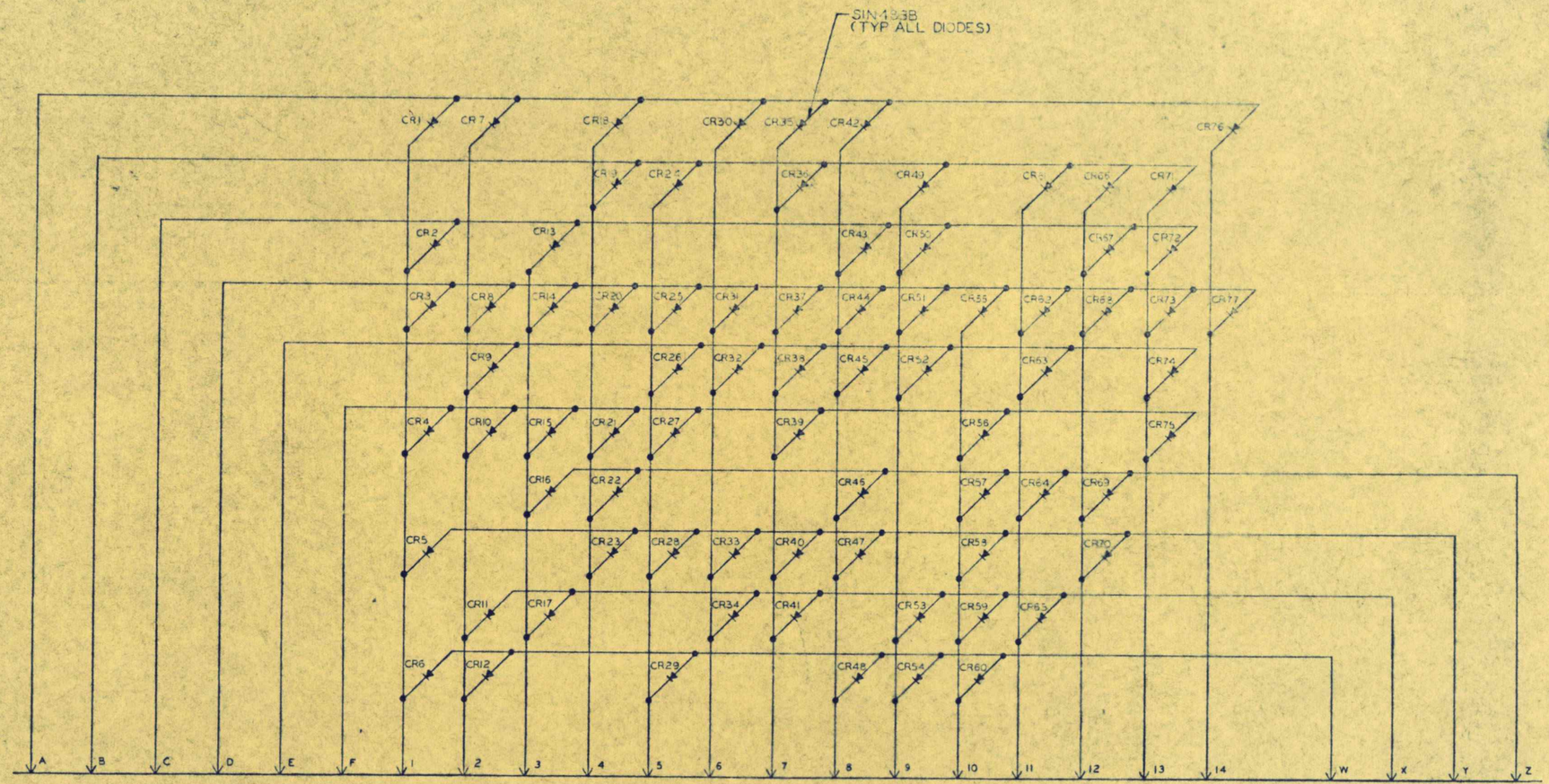
3/4/65 IP

COPYMATION, INC. 1817

NSFC FORM 422-9 (AUGUST 1960)

NOTICE- WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

PART NO	W.O.	REVISIONS			
		BOND	STOK	DESCRIPTION	DATE	APPROVAL



40M08736

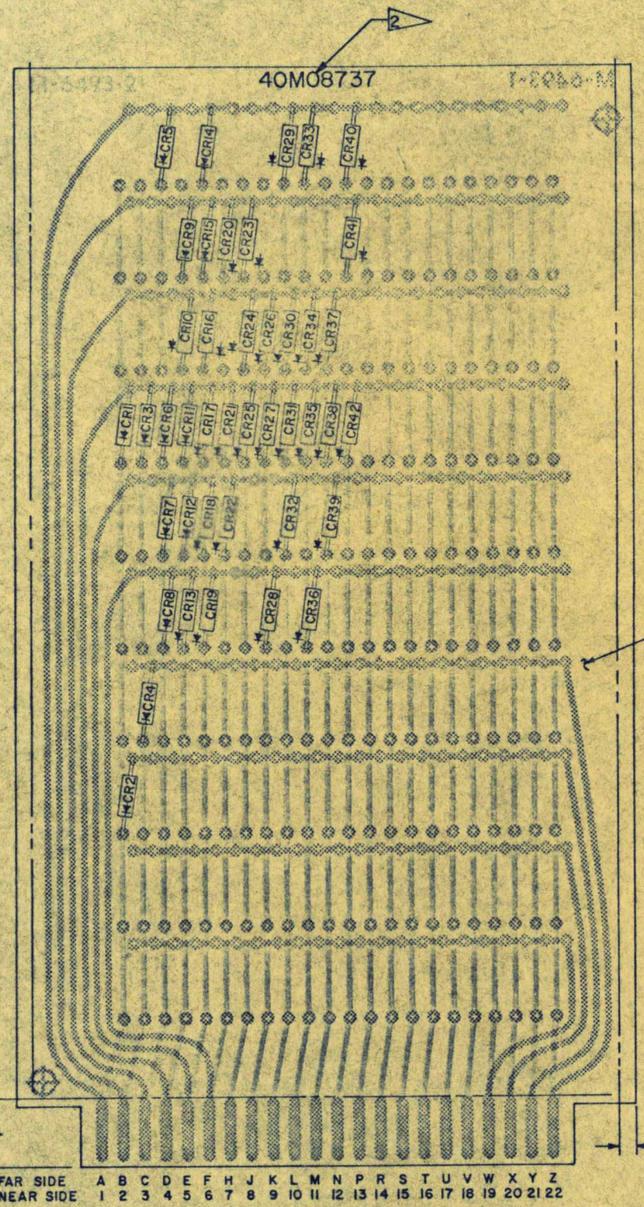
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	ORIGINAL DATE OF DRAWING FEB 27 1965 DRAFTSMAN / CHECKER / ENGINEER / SUBMITTED / APPROVED / DIRECTOR	ASSEMBLY, M-6493 DIODE MATRIX STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
NEXT ASSY / USED ON APPLICATION	MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH		WEIGHT CHECKER / DATE / CODE SCALE / UNIT WEIGHT	SIZE D 40M08736 SHEET 2 OF 2

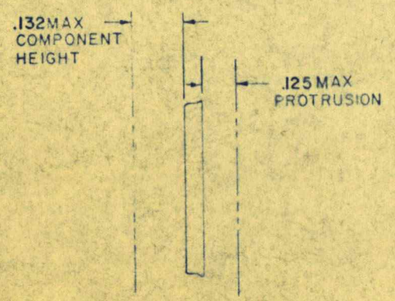
P10

5/9/65 IP

COPYMATION, INC. 161-2

PART NO.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL





PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-158.
2. STAMP PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293, COATING TO BE APPLIED BY SPRAY PROCESS.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD.
5. SOLDER COMPONENT LEADS ON BOTH SIDES OF THE BOARD WHERE APPLICABLE.

40M08737

PID

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH 3	ORIGINAL DATE OF DRAWING APR 8 1965; APPROVED; DIRECTOR	ASSEMBLY, M-6493 DIODE MATRIX STANDARD; WEIGHT CHECKER, DATE, CODE; SCALE 2/1, UNIT WEIGHT
NEXT ASSY, USED ON, APPLICATION			

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE ALABAMA

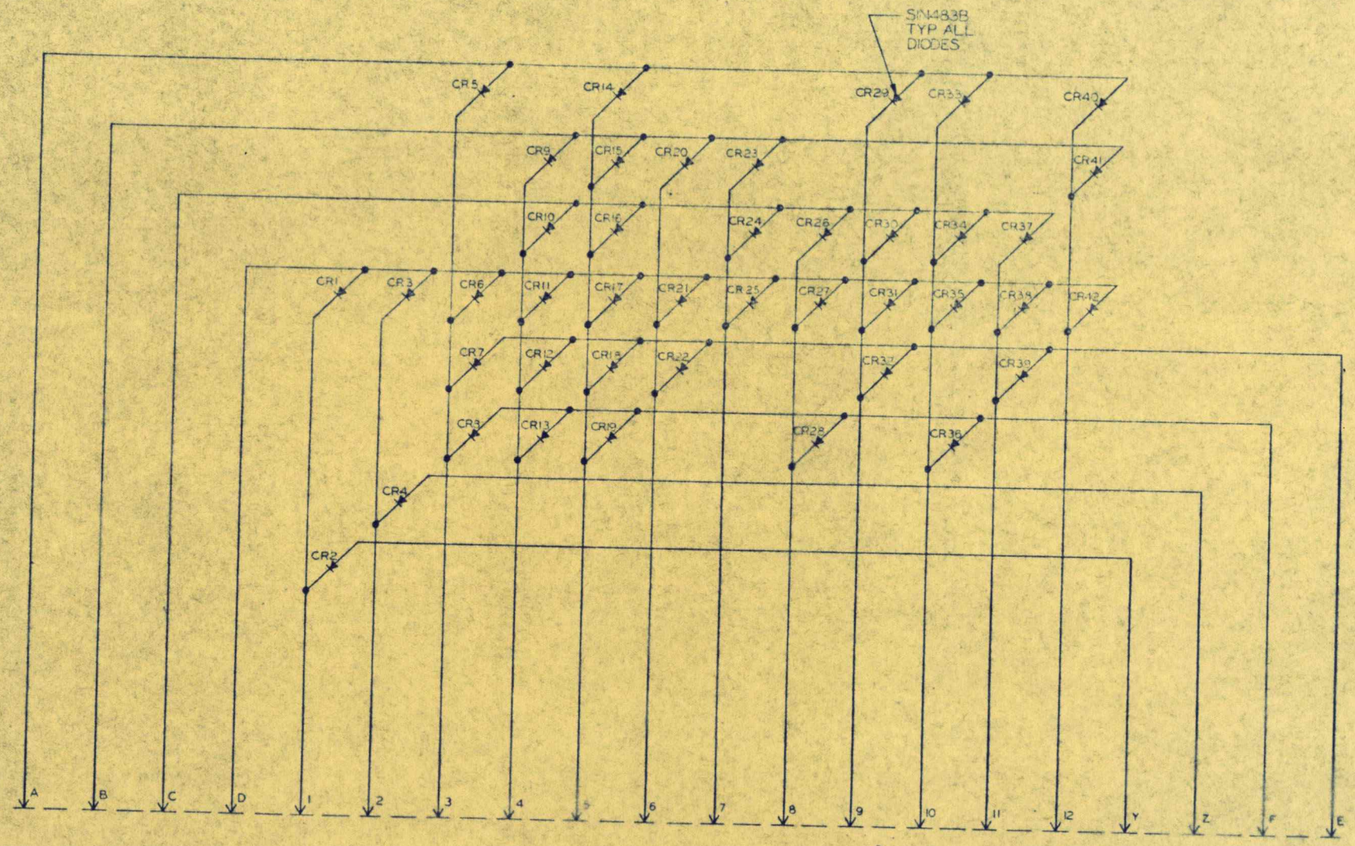
DWG SIZE D 40M08737 SHEET 1 OF 2

David 5/1/65 IP

NASA FORM 422-2 (AUGUST 1960)

NOTICE—WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	M F	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



40M08737

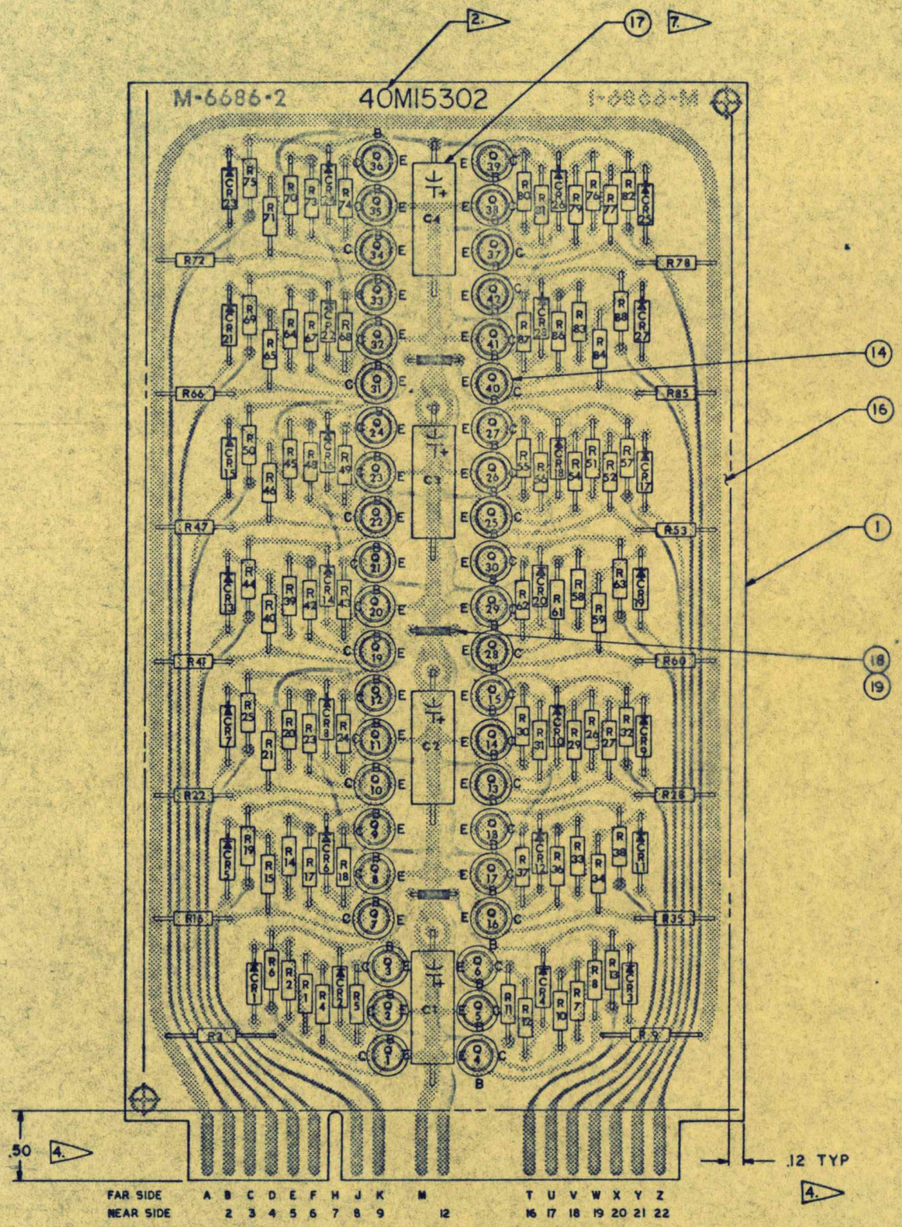
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ____ DECIMALS ____ ANGLES ____ MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING FEB 27, 1965 DRAFTSMAN CHECKED ENGINEER SUBMITTED APPROVED DIRECTOR	ASSEMBLY, M-6493 DIODE MATRIX STANDARD	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	PID DWG SIZE D 40M08737
NEXT ASSY ____ USED ON APPLICATION			WEIGHT CHECKER ____ DATE ____ CODE ____ SCALE ____ UNIT WEIGHT ____		SHEET 2 OF 2

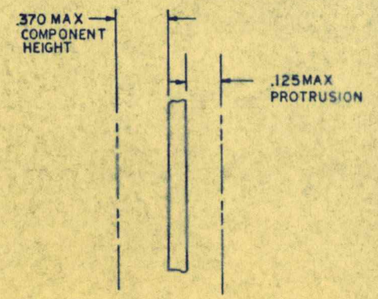
COPYMATION, INC. 101-7

MSFC FORM 432-S (AUGUST 1960)

Notice — When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

PART NO.	W.F.	REVISIONS				
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL





PARTIAL VIEW
SCALE: NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC 200-4 OR MSFC-PROC-224.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
6. SOLDER COMPONENT LEADS AND JUMPERS ON BOTH SIDES OF THE BOARD WHERE APPLICABLE.
7. SECURE COMPONENTS C1-C4 TO BOARD PER MSFC-PROC-257.

40M15302

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS .XX ±.03 / ANGLES	ORIGINAL DATE OF DRAWING DEC 31, 1965	ASSEMBLY, M-6686 DRIVER	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
40M08201	SATURN	MATERIAL	DESIGNED		
40M08202	SATURN	HEAT TREATMENT	DRAWN		
NEXT ASSY	USED ON	FINAL PROTECTIVE FINISH 3	CHECKED	WEIGHT CHECKED / DATE / CODE	DWG SIZE D — 40M15302
APPLICATION			ENGINEER	SCALE 2/1 / UNIT WEIGHT	SHEET 1 OF 4
			SUBMITTED		
			APPROVED DIRECTOR		

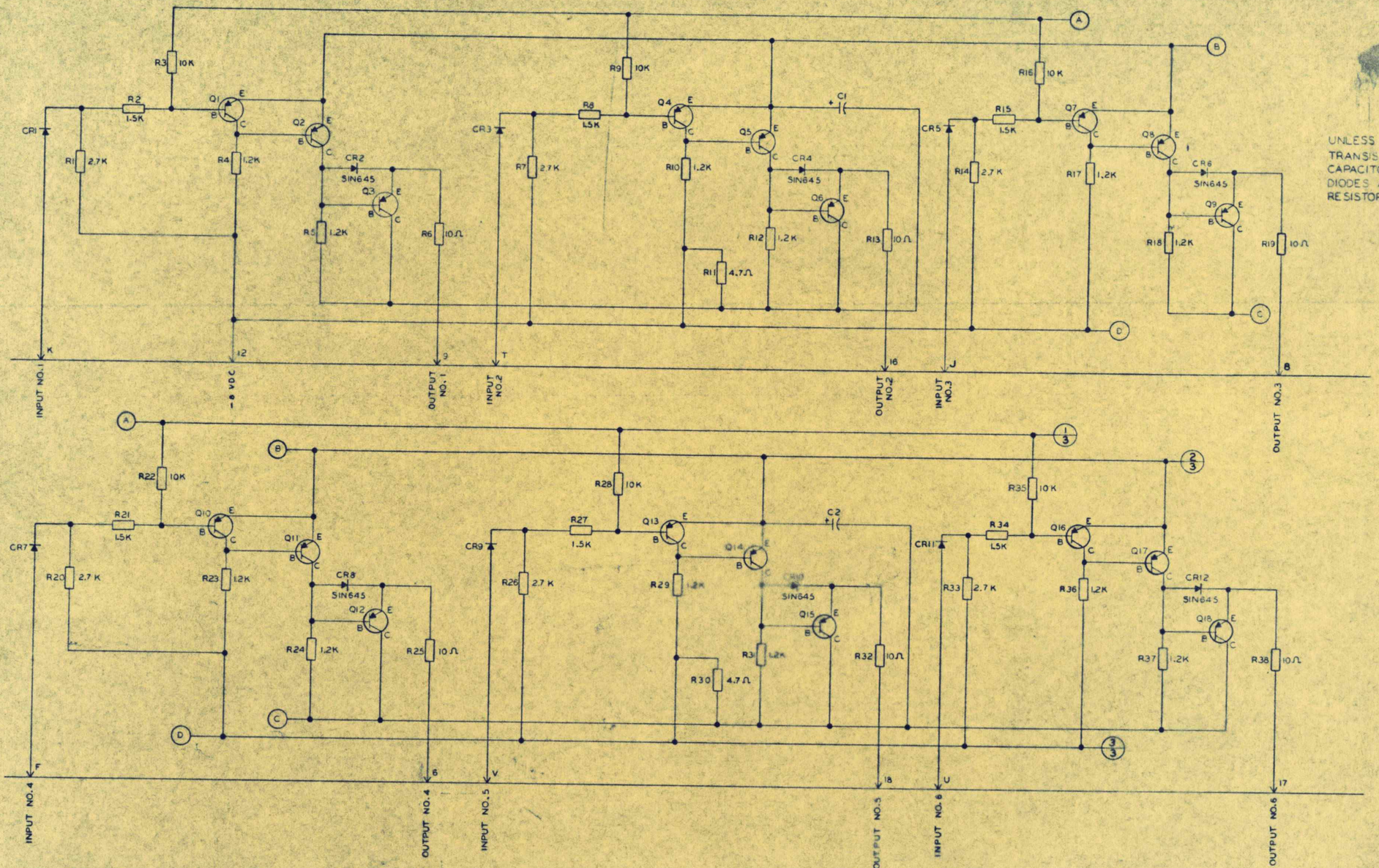
X.12.30
P9D
SYS CODE

9P

MSFC FORM 482-3 (AUGUST 1960)

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	W?	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



UNLESS OTHERWISE SPECIFIED:
TRANSISTORS ARE S2N722.
CAPACITORS ARE .47 UF, ± 10 %, 20 VDC.
DIODES ARE IN914.
RESISTOR ARE ± 5%, 1/4 W.

40M15302

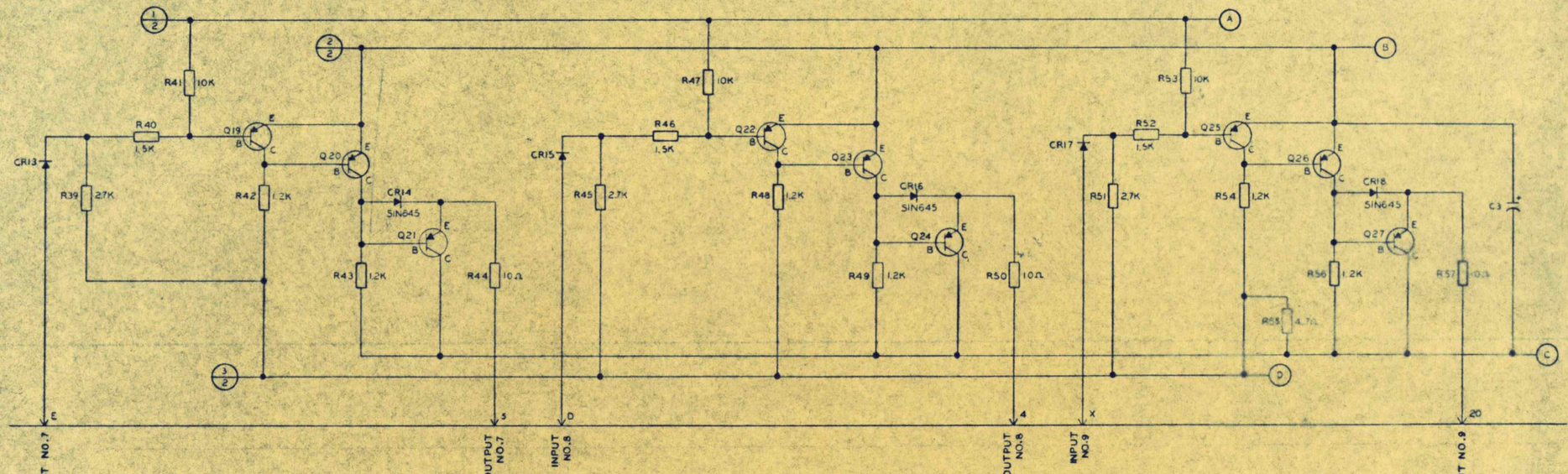
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING DEC. 31, 1965; CHECKED; ENGINEER; SUBMITTED; APPROVED; DIRECTOR	ASSEMBLY, M-6686 DRIVER
NEXT ASSY / USED ON / APPLICATION			WEIGHT CHECKER / DATE / CODE; SCALE / UNIT WEIGHT

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 40M15302 — SHEET 2 OF

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	WF	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL



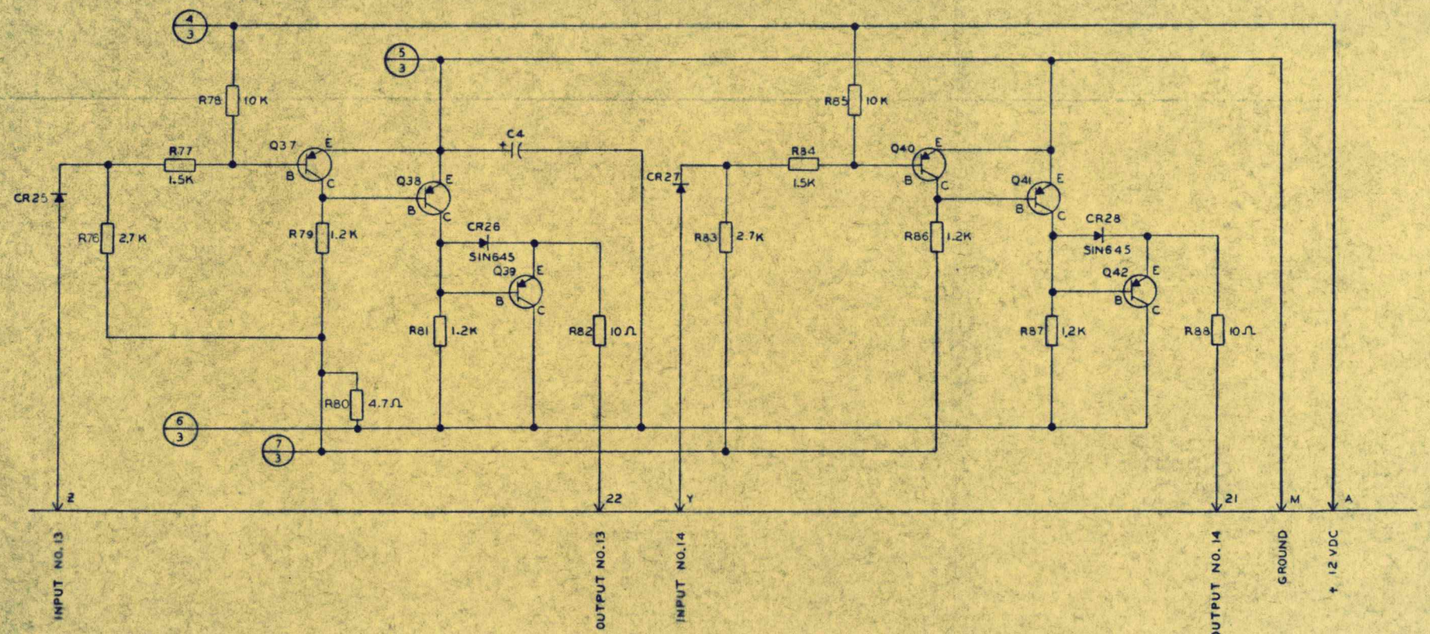
40M15302

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING DEC 31,1965	ASSEMBLY, M-6686 DRIVER	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	DRAFTER / CHECKER / ENGINEER / SUBMITTED / APPROVED / DIRECTOR	WEIGHT CHECKER / SCALE / DATE / CODE / UNIT WEIGHT	DWG SIZE D — 40M15302 — SHEET 3 OF
NEXT ASSY	USED ON	MATERIAL / HEAT TREATMENT / FINAL PROTECTIVE FINISH			
APPLICATION					

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

MSFC FORM 482-S (AUGUST 1960)

PART NO.	NF	REVISIONS				
		ZONE	BYM	DESCRIPTION	DATE	APPROVAL



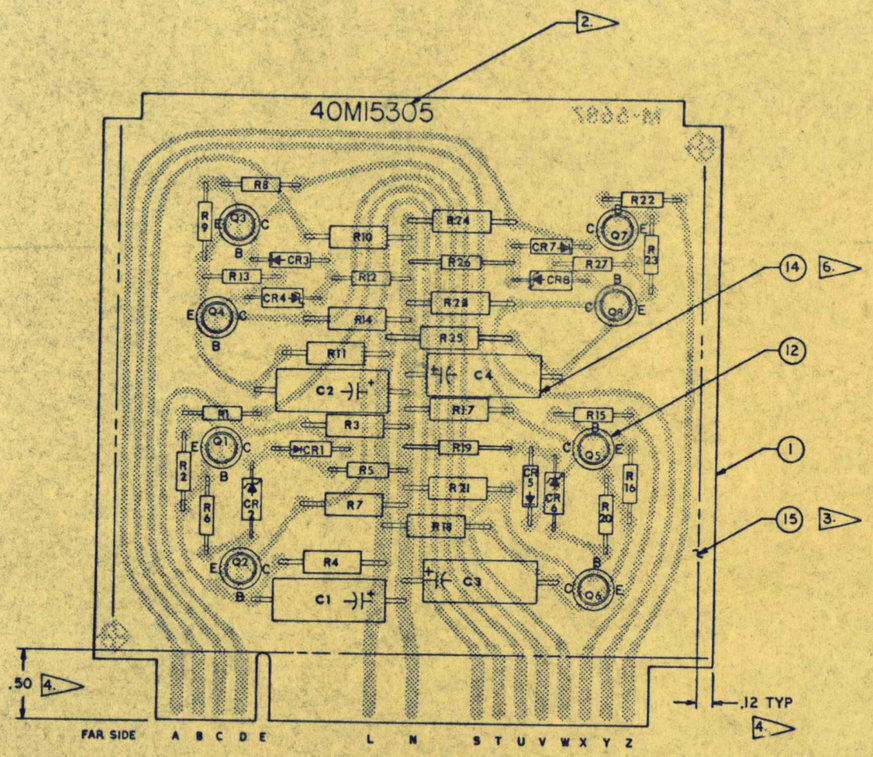
40MI5302

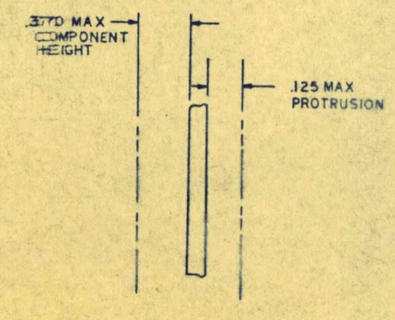
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING DEC 31,1965; CHECKED; ENGINEER; SUBMITTED; APPROVED; DIRECTOR	ASSEMBLY, M-6686 DRIVER	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY USED ON APPLICATION			WEIGHT CHECKER; DATE; CODE; SCALE; UNIT WEIGHT	DWG SIZE D — 40MI5302 — SHEET 4 OF 4

NASA-S-68-1 (AUGUST 1968)

Notice — When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

PART No.	M.P.	REVISIONS				
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL





PARTIAL VIEW
SCALE. NONE

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER NPC 200-4 OR MSFC-PROC-224.
2. MARK PER MSFC-STD-383.
3. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293.
4. AREAS AS DIMENSIONED SHALL BE FREE OF CONFORMAL COATING ON BOTH SIDES OF THE BOARD.
5. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION.
6. SECURE COMPONENTS C1-C4 TO BOARD PER MSFC-PROC-257.

40MI5305

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES: FRACTIONS —, DECIMALS .XX ±.03, ANGLES —	ORIGINAL DATE OF DRAWING JAN 1, 1966	ASSEMBLY, M-6687 DUAL INVERTER	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
40M08201	SATURN	MATERIAL	CHECKED		
40M08202	SATURN	HEAT TREATMENT	ENGINEER		
NEXT ASSY	USED ON	FINAL PROTECTIVE FINISH 3.	SUBMITTED		
APPLICATION			APPROVED		
			DIRECTOR	WEIGHT CHECKER / DATE / CODE	SIZE D, 40MI5305
				SCALE 2/1 / UNIT WEIGHT	SHEET 1 OF 2

V 12.30
P90
DATA CODE

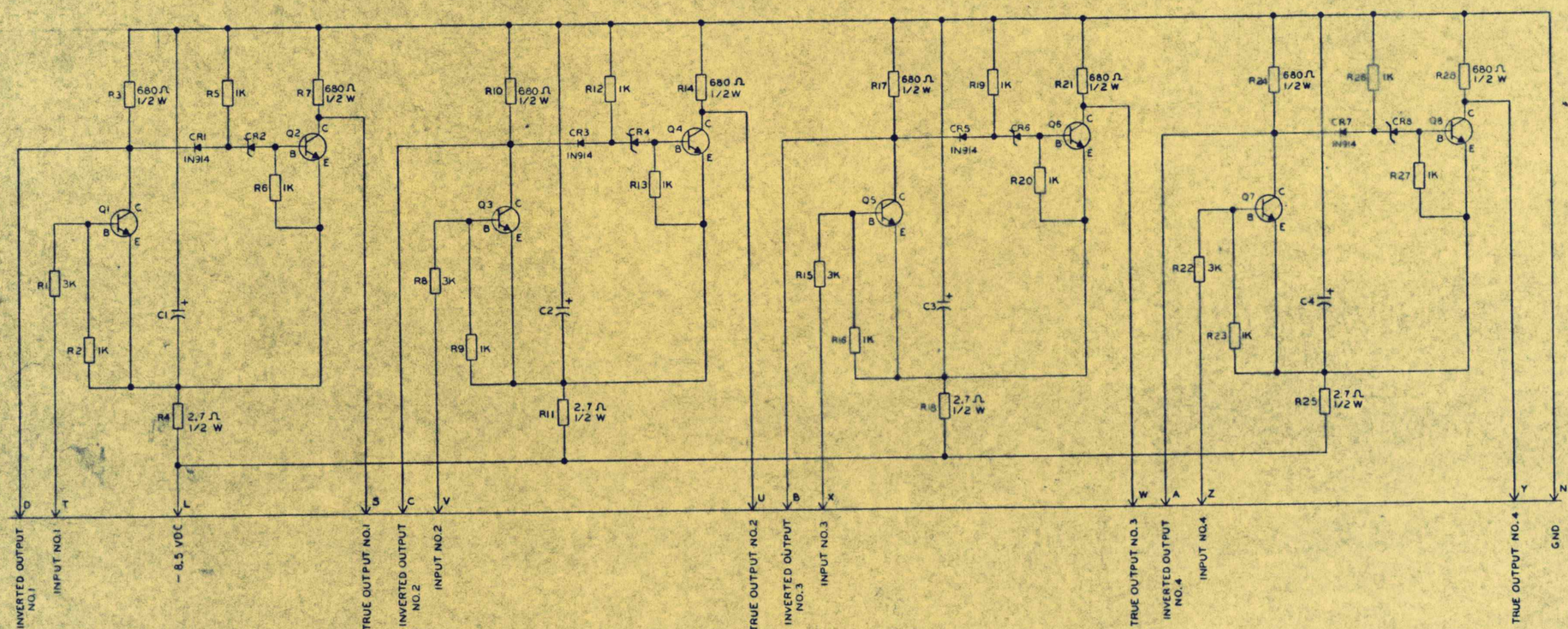
9P

MSFC FORM 482-S (AUGUST 1960)

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA, IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	MF	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL

UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE 1/4 W.
ALL RESISTORS ARE ± 5 %.
ALL CAPACITORS ARE 47 UF, ±10 %, 20 VDC.
ALL DIODES ARE SIN746 A.
ALL TRANSISTORS ARE GES2N936.



40M15305

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING DEC 30, 1965	ASSEMBLY, M-6687 DUAL INVERTER	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
NEXT ASSY	USED ON	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	DRAFTER; CHECKER; ENGINEER; SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE; UNIT WEIGHT	SIZE D; 40M15305; SHEET 2 OF 2
APPLICATION					

NAPG FORM 4824 (AUGUST 1962)

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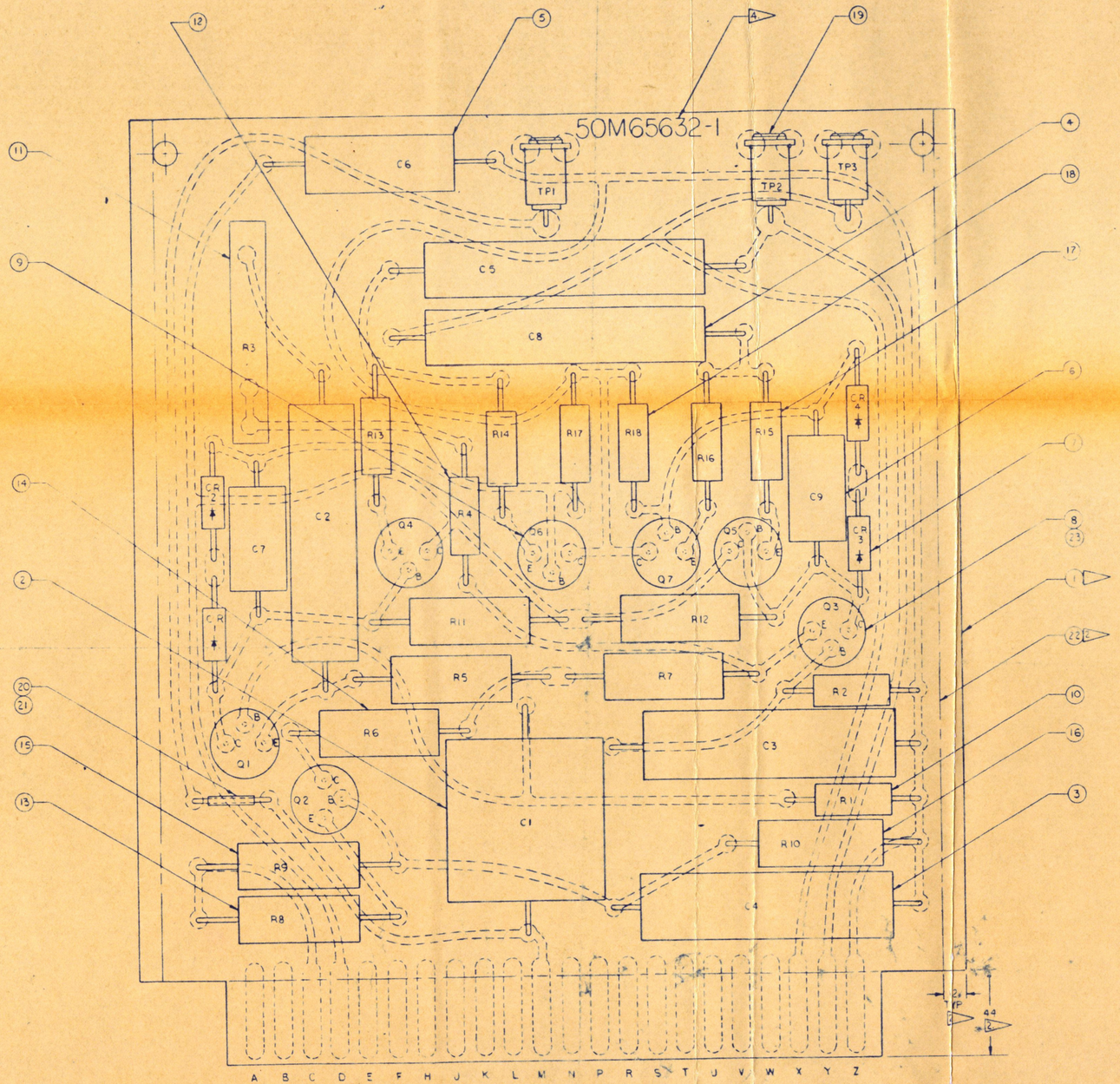
PART NO.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		AA	REVISED AND REDRAWN AND ALL APPLICABLE ECO'S INC UP TO AND INCLUDING TM-1049	9-1-65	J.K.F.
		AB	INC ECO TM-1240	9-13-65	D. Engle
		AC	INC ECO TM-1361A	6-24-66	J.D. Ruff
		AD	INC ECO TM-1732A	6-24-66	J.D. Ruff



NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-224 OR NPC 200-4.
2. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293 EXCEPT AREAS NOTED MUST BE KEPT FREE OF COATING MATERIAL
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION(S).
4. MARK PART NUMBER WITH 12 HIGH CHARACTERS AND COMPONENT DESIGNATIONS WITH .05 TO .09 HIGH CHARACTERS PER MSFC-STD-383. ALL COMPONENT DESIGNATION CHARACTERS TO BE THE SAME HEIGHT.
5. REFERENCE DRAWINGS
   PRINTED WIRING BOARD E50M65973
   PRINTED WIRING MASTER E50M65972
   ELECTRICAL SCHEMATIC D50M65974

CIRCUIT COMPONENT LIST

FIND NO	REFERENCE DESIGNATION (3)	NO REQD	DESCRIPTION	MILSPEC OR MFR NAME AND CODE	MIL TYPE OR MFG PART NO.
2	C1	1	CAPACITOR,2200PF ±5%, 500V	MIL-C-5C/4	CM30D222JN3
3	C2,C3 & C4	3	CAPACITOR,.022MF ±10%, 200V	MIL-C-14157	CP05BX223K
4	C5 & C8	2	CAPACITOR,.75 MF ±20%, 50V	MIL-C-3965/16	CL35C075MN3
5	C6	1	CAPACITOR,18MF ±10% ,50V	MIL-C-26655/2	CSR61BK
6	C7 & C9	2	CAPACITOR,470PF ±5% ,500V	MIL-C-5/14	CM15D471JN3
7	CR1 THRU CR4	4	DIODE	[illegible]	N-1483
8	Q1 THRU Q5	5	TRANSISTOR	MIL-S 19500/181	2N83
9	Q6 & Q7	2	TRANSISTOR	MOTOROLA 04713	2N2905
10	R1 & R2	2	RESISTOR,680Ω ±5%,1/2 W	MIL-R-11/3	RC20GF681J
11	R3	1	RESISTOR,5K ±5% ,1W	BOURNS # 9034	224P-500-502
12	R4	1	RESISTOR,270Ω ±5%,1/2W	MIL-R-11/3	RC20GF271J
13	R5,R7 & R8	3	RESISTOR,316Ω ±1%,1/4 W	MIL-R-55182/4	RNR63C3160FS
14	R6	1	RESISTOR,562Ω ±1%,1/4 W	MIL-R-55182/4	RNR63C5620FS
15	R9,R11 & R12	3	RESISTOR,1.47K ±1%,1/4 W	MIL-R-10509/2	RN65C1471F
16	R10	1	RESISTOR,5.62K±1%,1/4W	MIL-R-10509/2	RN65C5621F
17	R13 THRU R16	4	RESISTOR,560Ω ±5%,1/2W	MIL-R-11/3	RC20GF560J
18	R17 & R18	2	RESISTOR,10K±5%,1/2 W	MIL-R-11/3	RC20GF103J
19	TP1,TP2 & TP3	3	TEST JACK WHITE	SEALECTRO #98291	SKT-103-PC

50M65632
AD

SECOND ORIGINAL

50M65632-1 SHOWN

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING OCT 1, 64	PRINTED WIRING ASSEMBLY M4256E	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
50M65631 / 50M65931 SATURN GSE	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	APPROVED		SIZE E; 50M65632
NEXT ASSY / USED ON			WEIGHT CHECKER / DATE / CODE	SHEET 1 OF 1
APPLICATION		DIRECTOR	SCALE 4/1	UNIT WEIGHT

N/A MTD

6-181

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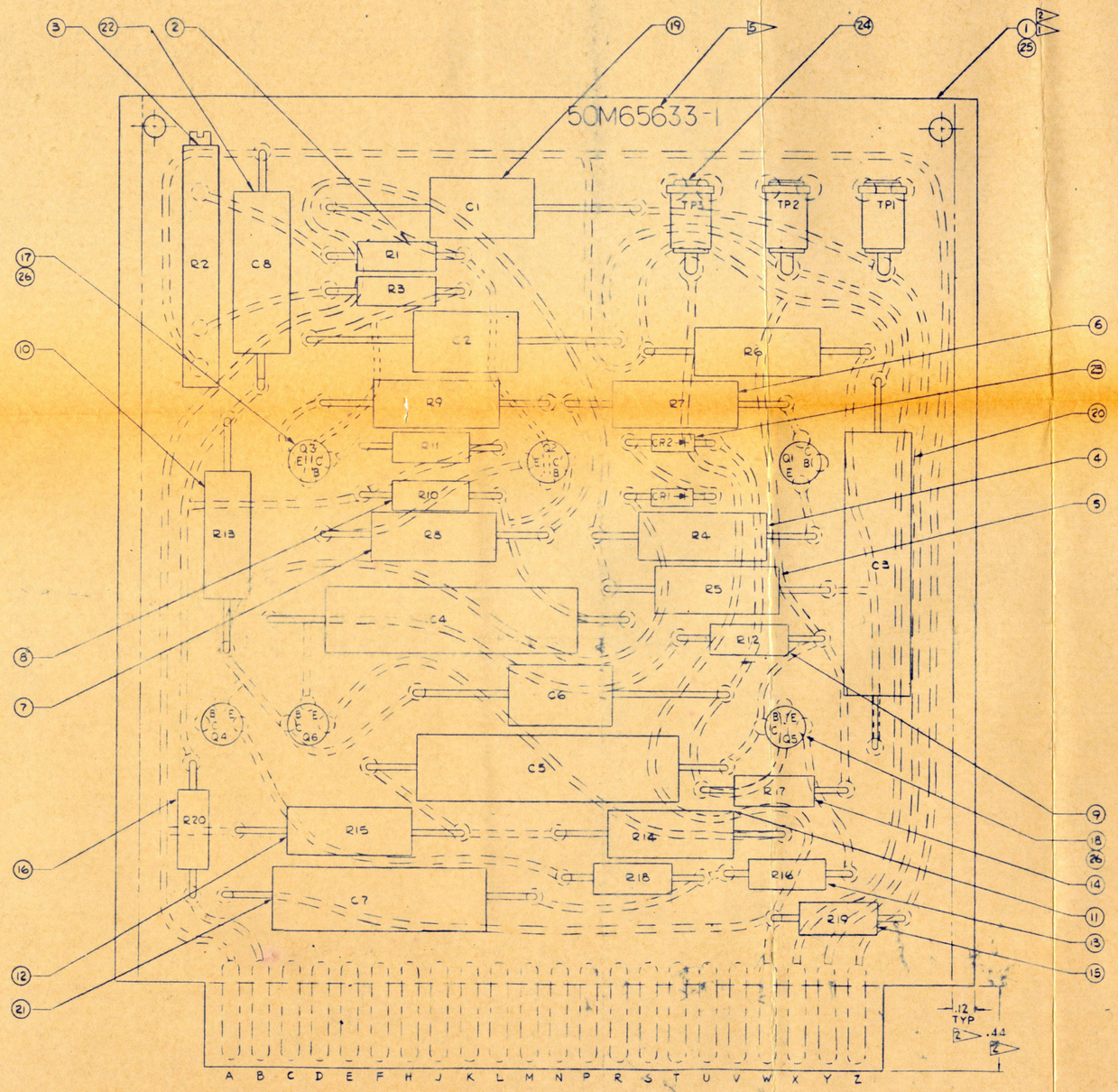
PART NO.	A/T	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
			AA	REVISED AND REDRAWN AND ALL APPLICABLE EO'S INC UP TO AND INCLUDING 7M-1038	9-1-65	JWE
			AB	7M-1224	1-14-66	W
			AC	7M-1366	1-18-66	W
			AD	7M-1739	1-28-66	W



NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-PROC-224 OR NPC 200-4.
2. CONFORMAL COAT BOTH SIDES OF BOARD PER MSFC-PROC-293 EXCEPT AREA NOTED MUST BE FREE OF COATING MATERIAL.
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATIONS PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION(S).
4. REFERENCE DRAWINGS:
   PRINTED WIRING MASTER E50M65990
   PRINTED WIRING BOARD E50M65987
   ELECTRICAL SCHEMATIC D50M65988
5. MARK PART NUMBER WITH .12 HIGH CHARACTER AND COMPONENT DESIGNATIONS WITH .05 TO .09 HIGH CHARACTERS PER MSFC-STD-383. ALL COMPONENT DESIGNATION CHARACTERS TO BE THE SAME HEIGHT.

CIRCUIT COMPONENT LIST

FIND NO.	REFERENCE DESIGNATION (3)	NO. REQD	DESIGNATION	MIL SPEC OR MFR NAME AND CODE	MIL TYPE OR MFR PART NO
2	R1, R3	2	RESISTOR, 3.3K, ±5%, 1/2W	MIL-R-11/3	RC20GF332J
3	R2	1	RESISTOR, VAR 500Ω	BOURNS 80294	224P-500-501
4	R4	1	RESISTOR, 825Ω, ±1%, 1/4W	MIL-R-10509/2	RN65C8250F
5	R5, R6	2	RESISTOR, 5.62K, ±1%, 1/4W	MIL-R-10509/2	RN65C5621F
6	R7	1	RESISTOR, 619Ω, ±1%, 1/4W	MIL-R-10509/2	RN65C6190F
7	R8, R9	2	RESISTOR, 178Ω, ±1%, 1/4W	MIL-R-10509/2	RN65C1780F
8	R10, R	2	RESISTOR, 2.2K, ±5%, 1W	MIL-R-11/3	RC20GF222J
9	R12	1	RESISTOR, 4.7K, ±5%, 1/2W	MIL-R-11/3	RC20GF472J
10	R13	1	RESISTOR, 121K, ±1%, 1/4W	MIL-R-10509/2	RN65C1211F
11	R14	1	RESISTOR, 511Ω, ±1%, 1/4W	MIL-R-10509/2	RN65C511RF
12	R15	1	RESISTOR, 215K, ±1%, 1/4W	MIL-R-10509/2	RN65C2151F
13	R16, R18	2	RESISTOR, 68Ω, ±5%, 1/2W	MIL-R-11/3	RC20GF680J
14	R17	1	RESISTOR, 10K, ±5%, 1/2W	MIL-R-11/3	RC20GF103J
15	R19	1	RESISTOR, 1K, ±5%, 1/2W	MIL-R-11/3	RC20GF102J
16	R20	1	RESISTOR, 100Ω, ±5%, 1/2W	MIL-R-11/3	RC20GF101J
17	Q1, Q2, Q3, Q4, Q6	5	TRANSISTOR	MOTOROLA 04713	2N914
18	Q5	1	TRANSISTOR	FAIRCHILD 07263	2N996
19	C1, C2, C6	3	CAPACITOR, 470 PF, 500 V	MIL-C-5/1	CM15D471JN3
20	C3, C4, C5	3	CAPACITOR, .022 UF, 200 V	MIL-C-14157B	CPV09AIK223K
21	C7	1	CAPACITOR, 75 UF, 150 V	MIL-C-3965/16	CL33C075MN3
22	C8	1	CAPACITOR, 8 UF, 50 V	MIL-C-26655/2C	CS13BG1B6K
23	CR1, CR2	2	DIODE	03508	IN4449
24	TP1, TP2, TP3	3	TEST JACK, WHITE	SEALECTRO 98291	SKT-103-PC

50M65633
AD

SECOND ORIGINAL

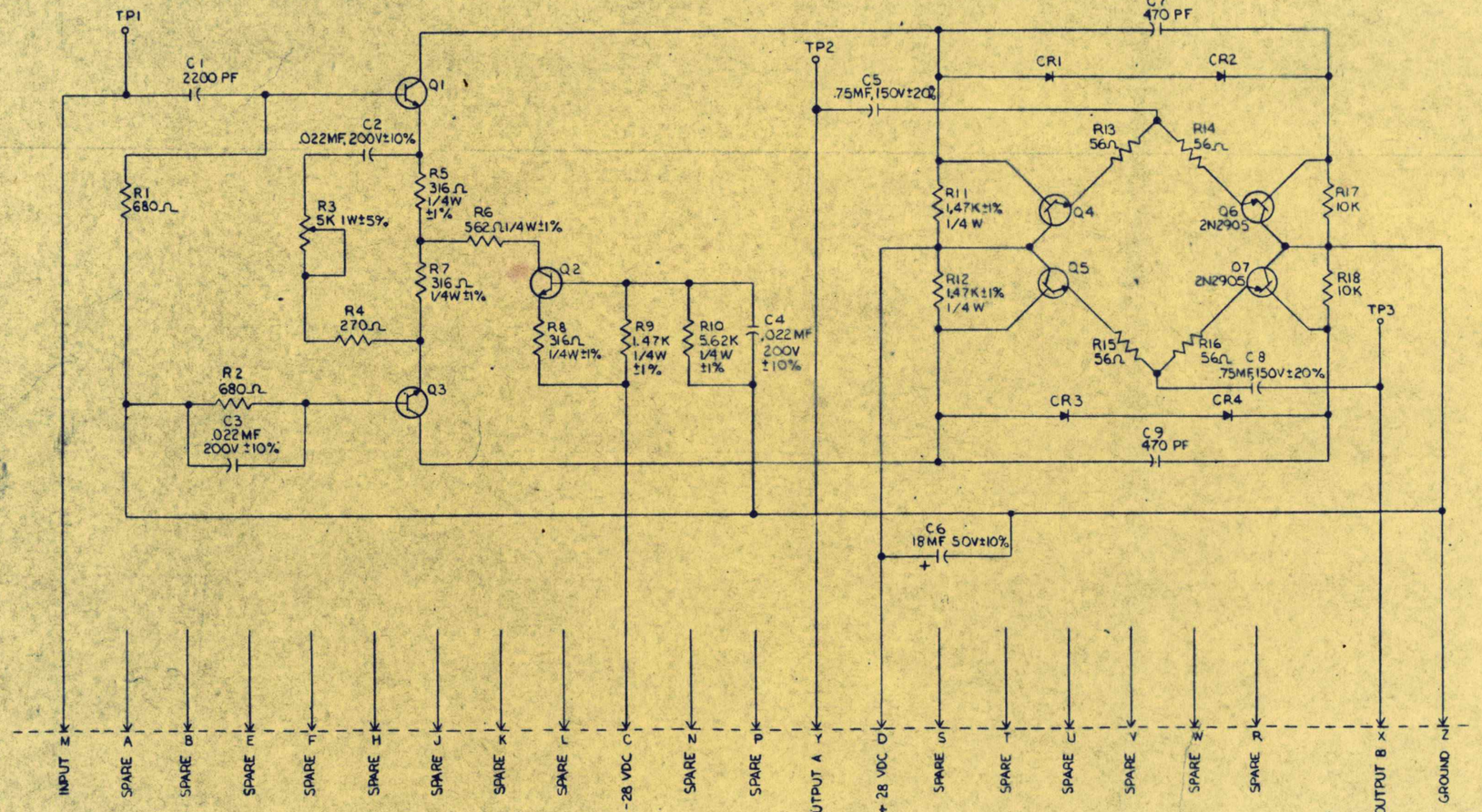
50M65633-1 SHOWN

N/A
M7D

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING JUN 25, 1964	PRINTED WIRING ASSEMBLY LINE AMPLIFIER #1 M42558	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
50M65932-1 SATURN GSE / NEXT ASSY / USED ON / APPLICATION	MATERIAL / HEAT TREATMENT / FINAL PROTECTIVE FINISH	APPROVED / DIRECTOR	WEIGHT CHECKER / DATE / CODE; SCALE 4/1 / UNIT WEIGHT	SIZE E; 50M65633; SHEET 1 OF 1

7M

PART NO.	NF	ZONE	BTM	REVISIONS DESCRIPTION	DATE	APPROVAL
			AA	REVISED AND REDRAWN AND ALL APPLICABLE EO'S INC UP TO AND INCLUDING TM-1024	9-1-65	JLE
			AB	INC EO TM-1649	12-14-65	MBell



NOTES:

1. UNLESS OTHERWISE SPECIFIED ALL COMPONENTS ARE AS FOLLOWS:
   RESISTORS ARE IN OHMS, 1/2 W ±5%
   DIODES ARE IN4449
   TRANSISTORS ARE 2N1613
   CAPACITORS ARE 500 V, ±5%
2. REFERENCE DRAWING
   PRINTED WIRING ASSEMBLY E50M65632
   PRINTED WIRING BOARD E50M65973
   PRINTED WIRING MASTER E50M65972

50M65974
AB

SECOND ORIGINAL

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES; MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING SEPT 28 64	ELECTRICAL SCHEMATIC M4256E
NEXT ASSY: SATURN GSE; USED ON: APPLICATION		DRAFTSMAN: BRYANT; CHECKER: HANES; ENGINEER: A.ADAIR; SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKER; DATE; CODE; SCALE NONE; UNIT WEIGHT; SHEET 1 OF 1

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG SIZE D — 50M65974

NASA FORM 4258 (AUGUST 1960)

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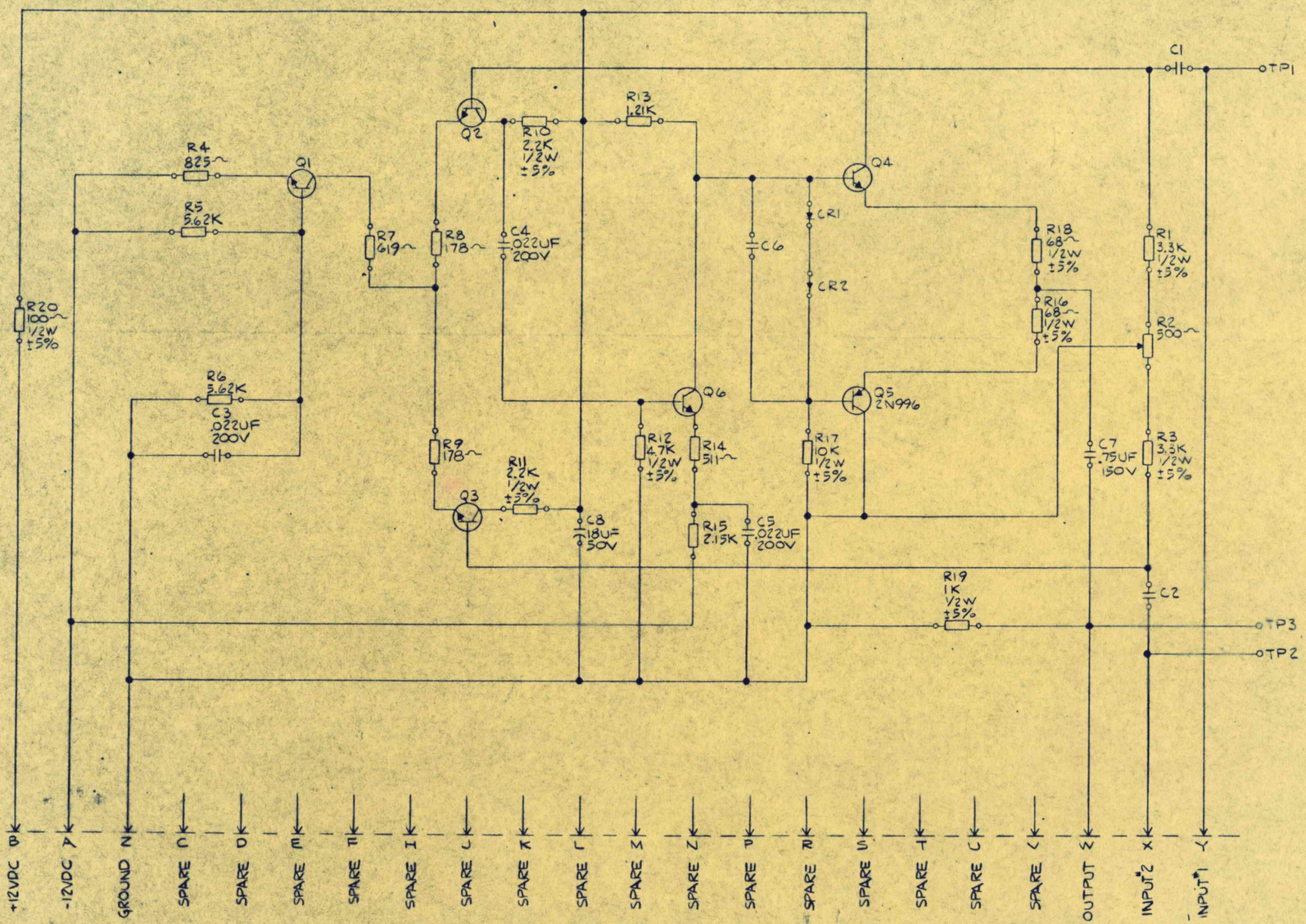
PART NO.	MF	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		AA	REDRAWN	9-1-63	QKE
		AB	INC EO 7M-1632	6-15-64	[illegible]



NOTES

1. UNLESS OTHERWISE SPECIFIED ALL COMPONENTS ARE AS FOLLOWS
   RESISTORS ARE 1/4W ±1%
   TRANSISTORS ARE 2N 4
   CAPACITORS ARE 470PF 300V
   DIODES ARE N 4449.
2. REFERENCE DRAWNS
   PRINTED WIRING MASTER E50M65990
   PRINTED WIRING BOARD E50M65981
   PRINTED WIRING ASSEMBLY E50M63633

50M65988
AB

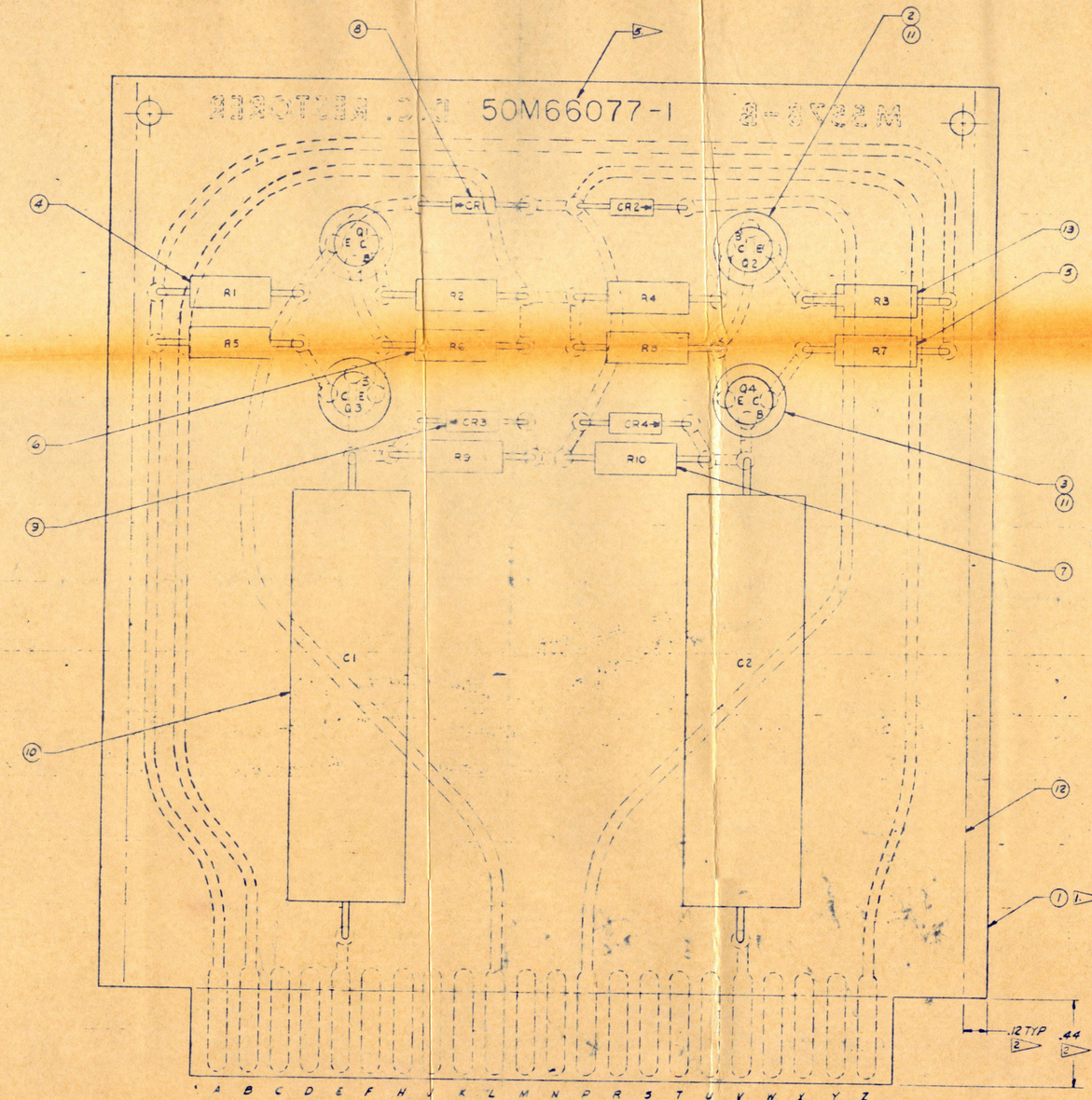
SECRET (CONFIDENTIAL)

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS / DECIMALS / ANGLES	ORIGINAL DATE OF DRAWING JULY 1964	ELECTRICAL SCHEMATIC M42553 LINE AMPLIFIER *1	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE ALABAMA	N/A
NEXT ASSY: SATURN GSE	MATERIAL	DRAFTSMAN M.D.R.S. / CHECKER / ENGINEER ADAIR			M7J
USED ON	HEAT TREATMENT	SUBMITTED J.M. Rowe		DWG SIZE D	50M65988
APPLICATION	FINAL PROTECTIVE FINISH	APPROVED / DIRECTOR	WEIGHT CHECKER / DATE / CODE	SCALE NONE / UNIT WEIGHT	SHEET 1 OF 1

REVISIONS					
PART NO.	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		AA	REVISED END DRAWN AND ALL APPLICABLE ECO'S INCLUP TO AND INCLUDING TMGSE: G47		

NOTES:

1. PRINTED CIRCUIT ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER M5FC-PROC-224 OR NPC 200-4.
2. CONFORMAL COAT BOTH SIDES OF BOARD PER M5FC-PROC-293 EXCEPT AREA NOTED MUST BE KEPT FREE OF COATING MATERIAL.
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATIONS PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATIONS (S).
4. REFERENCE DRAWINGS: PRINTED WIRING BOARD 50M66078 PRINTED WIRING MASTER 50M66079 ELECTRICAL SCHEMATIC D50M66080
5. STAMP PART NO. AND COMPONENT DESIGNATIONS PER M5FC-STD-383



CIRCUIT COMPONENT LIST

FIND NO.	REFERENCE DESIGNATION (3)	NO REQD	DESCRIPTION	MIL SPEC OR MFR NAME AND CODE	MIL TYPE OR MFR PART NO.
2	Q1 AND Q2	2	TRANSISTOR	MOTOROLA 04713	2N2501
3	Q3 AND Q4	2	TRANSISTOR	MOTOROLA 04713	2N3250
4	R1	1	RESISTOR, 5.6K, ±5%, 1/2W	MIL-R-11/3A	RC20GF562J
5	R2, R4, R5 AND R7	4	RESISTOR 100, ±5%, 1/2W	MIL-R-11/3A	RC20GF101J
6	R6	1	RESISTOR, 56K, ±5%, 1/2W	MIL-R-11/3A	RC20GF563J
7	R3 AND R10	2	RESISTOR, 180, ±5%, 1/2W	MIL-R-11/3A	RC20GF180J
8	CR1 AND CR2	2	DIODE	MIL-S-19500/116A	1N71A
9	CR3 AND CR4	2	DIODE	MIL-S-19500/201	1N277
10	C1 AND C2	2	CAPACITOR, .10 µf, ±5%, 200V	MIL-C-14157	CPV09A1K104J
13	R3 AND R8	2	RESISTOR, 27K, ±5%, 1/2W	MIL-R-11/3A	RC20GF273J

50M66077-1 SHOWN

50M66077 AA

APPROVED FOR PUBLIC RELEASE

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS DECIMALS ANGLES	ORIGINAL DATE OF DRAWING SEPT 2, 64	PRINTED WIRING ASSEMBLY M8378-B
50M65731	MATERIAL	DRAFTSMAN	GEORGE C. MARSHALL SPACE FLIGHT CENTER
50M65732 SAT, JPL 335	HEAT TREATMENT	CHECKED JAMES	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
NEXT ASSY USED ON	FINAL PROTECTIVE FINISH	ENGINEER SUBMITTED	HUNTSVILLE, ALABAMA
APPLICATION		APPROVED	DWG SIZE E — 50M66077
		WEIGHT CHECKER DATE CODE	SHEET 1 OF 1
		SCALE 4/1 UNIT WEIGHT	

N/A MTD

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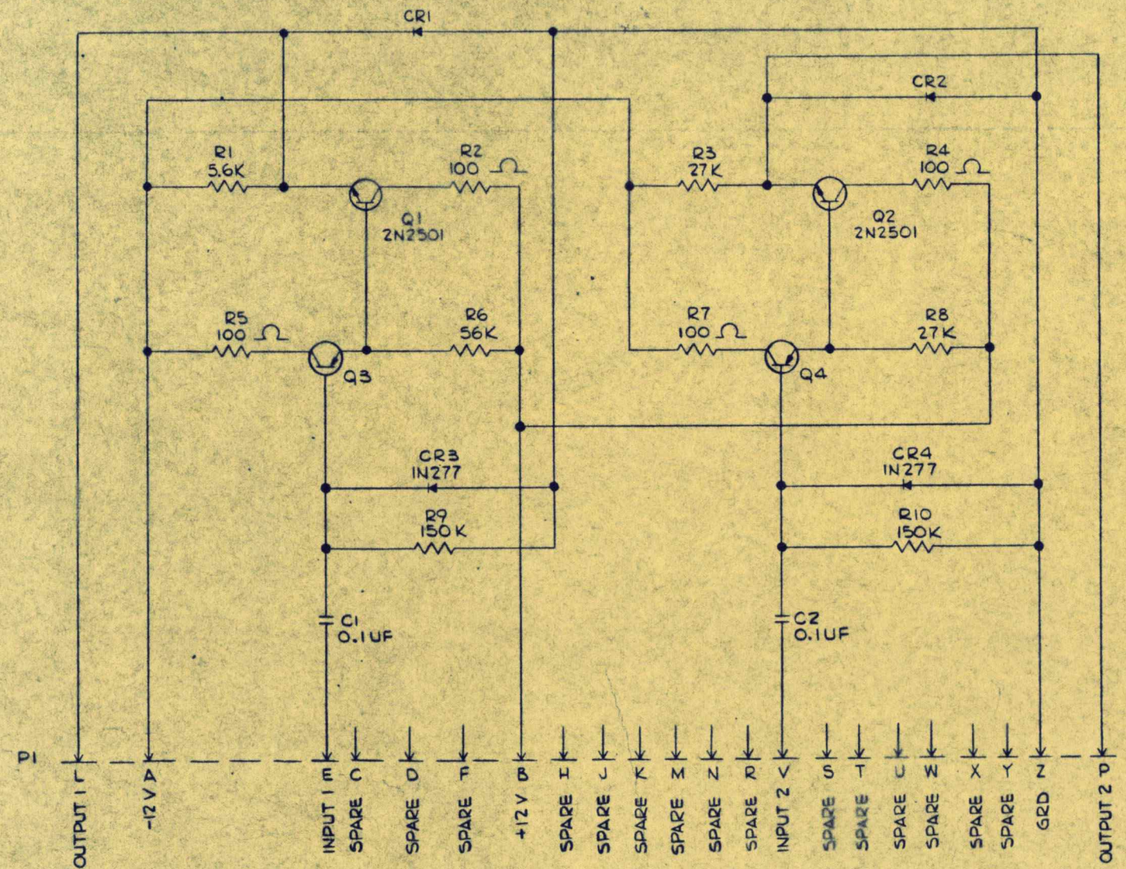
PART No.	REVISIONS				
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		AA	REVISED AND REDRAWN AND ALL APPLICABLE EO'S INC UP TO AND INCLUDING TMGSE-527	9-1-65	GKE

NOTES:

1. UNLESS OTHERWISE SPECIFIED ALL COMPONENTS ARE AS FOLLOWS:
   RESISTORS ARE 1/2W ± 5%
   CAPACITORS ARE ± 5% 200V
   TRANSISTORS ARE 2N3250
   DIODES ARE IN914
2. REFERENCE DRAWINGS:
   PRINTED WIRING ASSEMBLY E50M66077
   PRINTED WIRING BOARD E50M66078
   PRINTED WIRING MASTER E50M66079



50M66080
AA

SECOND (illegible)

N/A
M7J

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING SEPT. 1, 64	ELECTRICAL SCHEMATIC M5578-B	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA	
NEXT ASSY: SATURN GSE	MATERIAL	DRAFTSMAN: CHECKED: HANES	WEIGHT CHECKER / DATE / CODE	SIZE D	DWG NO. 50M66080
USED ON	HEAT TREATMENT	STRESS: ENGINEER: LAMAIR	SCALE NONE	UNIT WEIGHT	SHEET OF
APPLICATION	FINAL PROTECTIVE FINISH	SUBMITTED: J.M., ROXY			21
		APPROVED: DIRECTOR			

MSFC FORM 482-B (AUGUST 1960)

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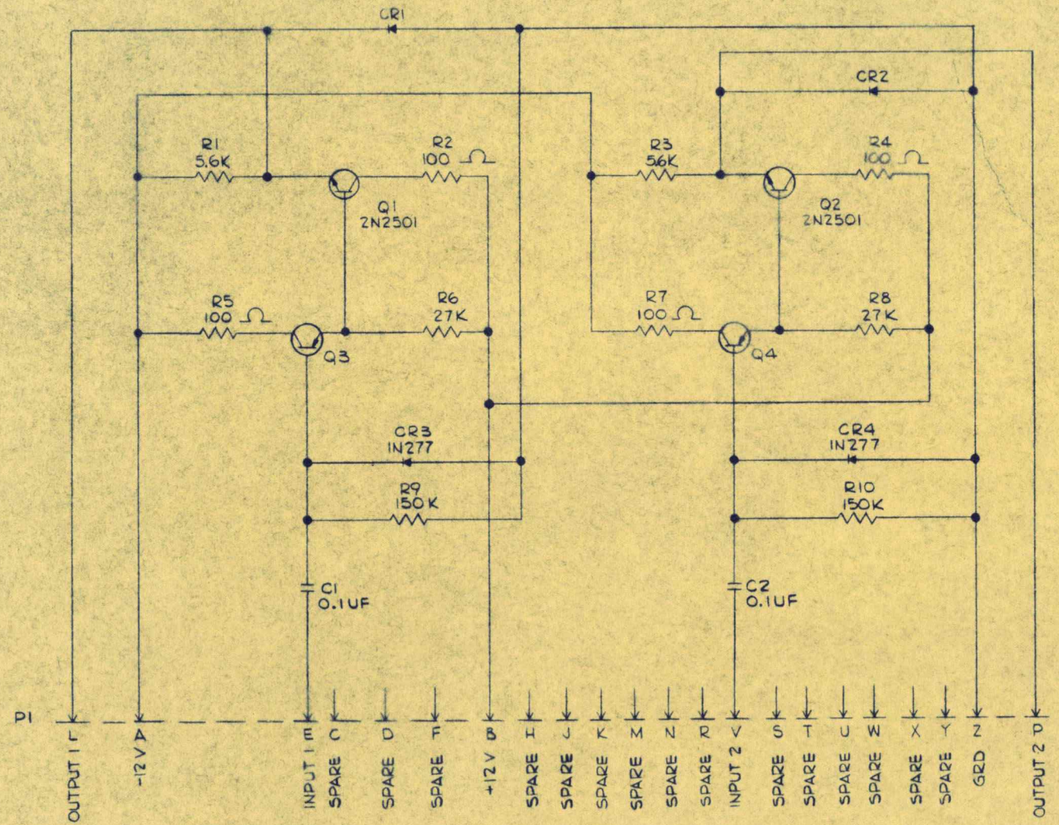
PART No.	MF	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		AA	REVISED AND REDRAWN AND ALL APPLICABLE EO'S INC UP TO AND INCLUDING TMGSE-327	9-1-65	JKL
		AB	INC. EO. 7M-1907	6-21-66	

NOTES:

1. UNLESS OTHERWISE SPECIFIED ALL COMPONENTS ARE AS FOLLOWS:
   RESISTORS ARE 1/2W ± 5%
   CAPACITORS ARE ±5% 200V
   TRANSISTORS ARE 2N3250
   DIODES ARE IN914
2. REFERENCE DRAWINGS:
   PRINTED WIRING ASSEMBLY E50M66077
   PRINTED WIRING BOARD E50M66078
   PRINTED WIRING MASTER E50M66079



50M66080
AB

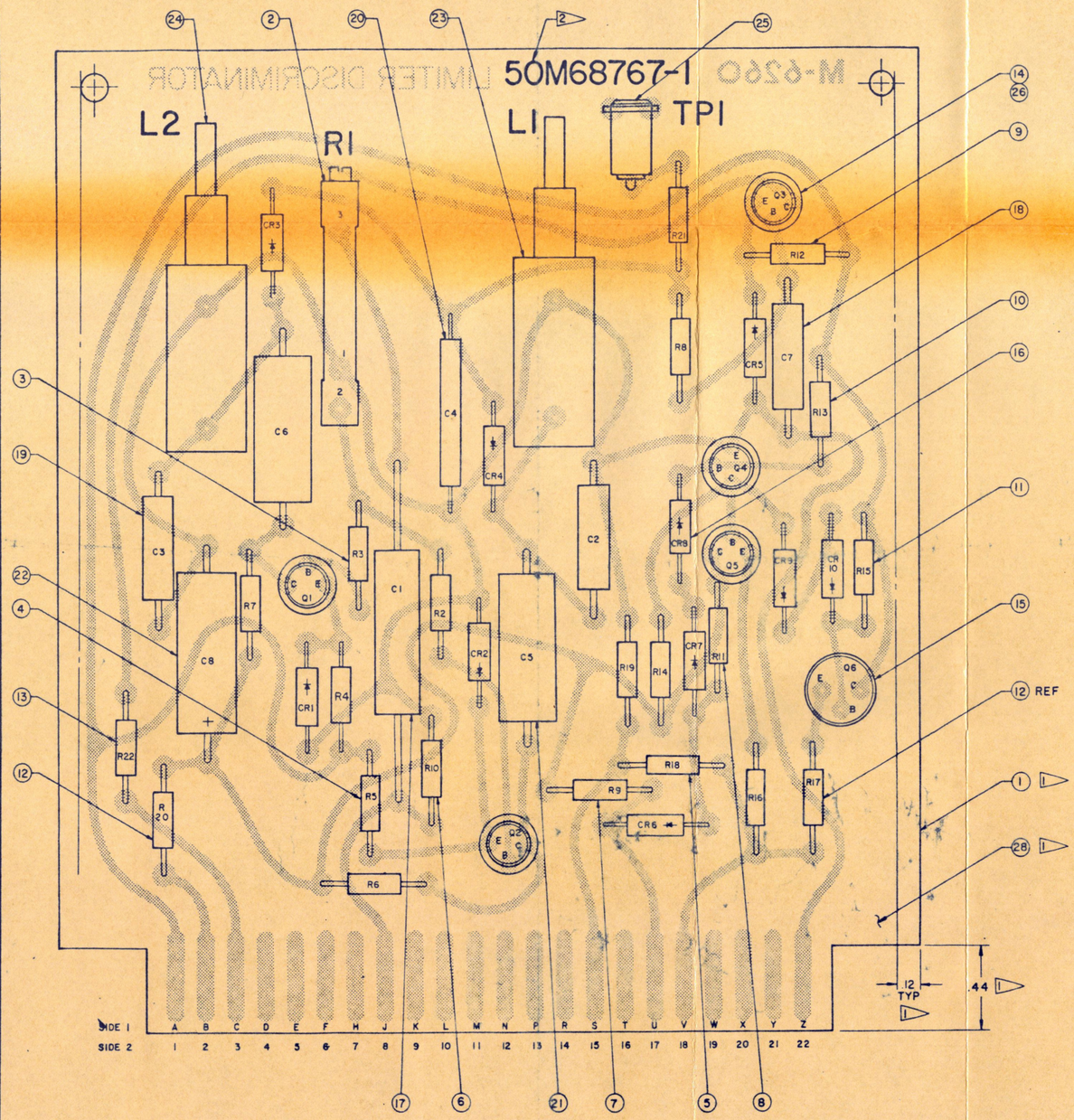
		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING SEPT. 1, 64	ELECTRICAL SCHEMATIC M5578-B	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	DRAFTSMAN CHECKER CHECKER STRESS ENGINEER PROJECT ENGINEER		
		MATERIAL	SUBMITTED J. M. ROXY		
NEXT ASSY	SATURN GSE USED ON	HEAT TREATMENT	APPROVED	WEIGHT CHECKER DATE CODE	DWG SIZE D 50M66080
APPLICATION		FINAL PROTECTIVE FINISH	DIRECTOR	SCALE NONE UNIT WEIGHT	SHEET 1 OF 1

N/A
MTJI
SIGN CODE

21

Change Date
26 June 1967

PART No.	REVISIONS					
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC EO 5-5 PAT. 1048	2-19-65	
		B	INC EO 7M-1725	12-2-65	
		C	INC EO 7M-1734		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L2
R1
L1
TP1
M-6260 LIMITER DISCRIMINATOR
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SIDE 2 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
.12 TYP
.44
12 REF

CIRCUIT COMPONENT LIST					
FIND NO.	REFERENCE DESIGNATION [3]	NO. REQD	DESCRIPTION	MIL SPEC OR MFR NAME AND CODE	MIL TYPE OR MFR PART NO.
2	R1,	1	RESISTOR	BOURNS 80294	RT12C2P-102
3	R2,R3	2	RESISTOR	MIL-R-11/8C	RC07GF681J
4	R4,R5	2	RESISTOR	MIL-R-11/8C	RC07GF272J
5	R6,R7,R14,R18	4	RESISTOR	MIL-R-11/8C	RC07GF222J
6	R10	1	RESISTOR	MIL-R-11/8C	RC07GF331J
7	R8,R9,R19	3	RESISTOR	MIL-R-11/8C	RC07GF122J
8	R11	1	RESISTOR	MIL-R-11/8C	RC07GF472J
9	R12	1	RESISTOR	MIL-R-11/8C	RC07GF471J
10	R13	1	RESISTOR	MIL-R-11/8C	RC07GF223J
11	R15,R21	2	RESISTOR	MIL-R-11/8C	RC07GF103J
12	R16,R17,R20	3	RESISTOR	MIL-R-11/8C	RC07GF101J
13	R22	1	RESISTOR	MIL-R-11/8C	RC07GF100J
14	Q1,Q2,Q3,Q4,Q5	5	TRANSISTOR	MOTOROLA 04713	2N2501
15	Q6	1	TRANSISTOR	MIL-S-19500	2N2905
16	CR1-CR10	10	DIODE		1N4449
17	C1	1	CAPACITOR	MIL-C-3965116	CL23CNOR5SN3
18	C2,C7	2	CAPACITOR	MSFC-SPEC-400/2	CY15C102J
19	C3	1	CAPACITOR	MSFC-SPEC-400/2	CY15C821J
20	C4	1	CAPACITOR	50M60148/1	SCTM582VBJ
21	C5,C6	2	CAPACITOR	50M60148/1	SCTM473VAJ
22	C8,	1	CAPACITOR	MIL-C-26655/2C	CSI3AGI86K
23	L1	1	INDUCTOR COIL	DELEVAN 99800	4000-31
24	L2	1	INDUCTOR COIL	DELEVAN 99800	4000-27
25	TP-1	1	TEST POINT	SEALECTRO 98291	SKT-103PC

NOTES:

1. PRINTED WIRING ASSEMBLY TO BE CONSTRUCTED AND INSPECTED PER MSFC-STD-154, EXCEPT CONFORMAL COATING TO BE APPLIED TO BOTH SIDES OF ASSEMBLY PER MSFC-PROC-293 AS SHOWN, AFTER FINAL CHECKOUT AND ACCEPTANCE TESTS HAVE BEEN PERFORMED.
2. MARK PART NUMBER WITH .12 HIGH CHARACTERS AND COMPONENT DESIGNATIONS WITH .05 TO .09 HIGH CHARACTERS PER MSFC-STD-383. ALL COMPONENT DESIGNATION CHARACTERS TO BE THE SAME HEIGHT.
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION (S).
4. REFERENCE DRAWINGS:
   PRINTED WIRING MASTER 50M68765
   PRINTED WIRING BOARD 50M68766
   ELECTRICAL SCHEMATIC 50M68768

50M68767 C

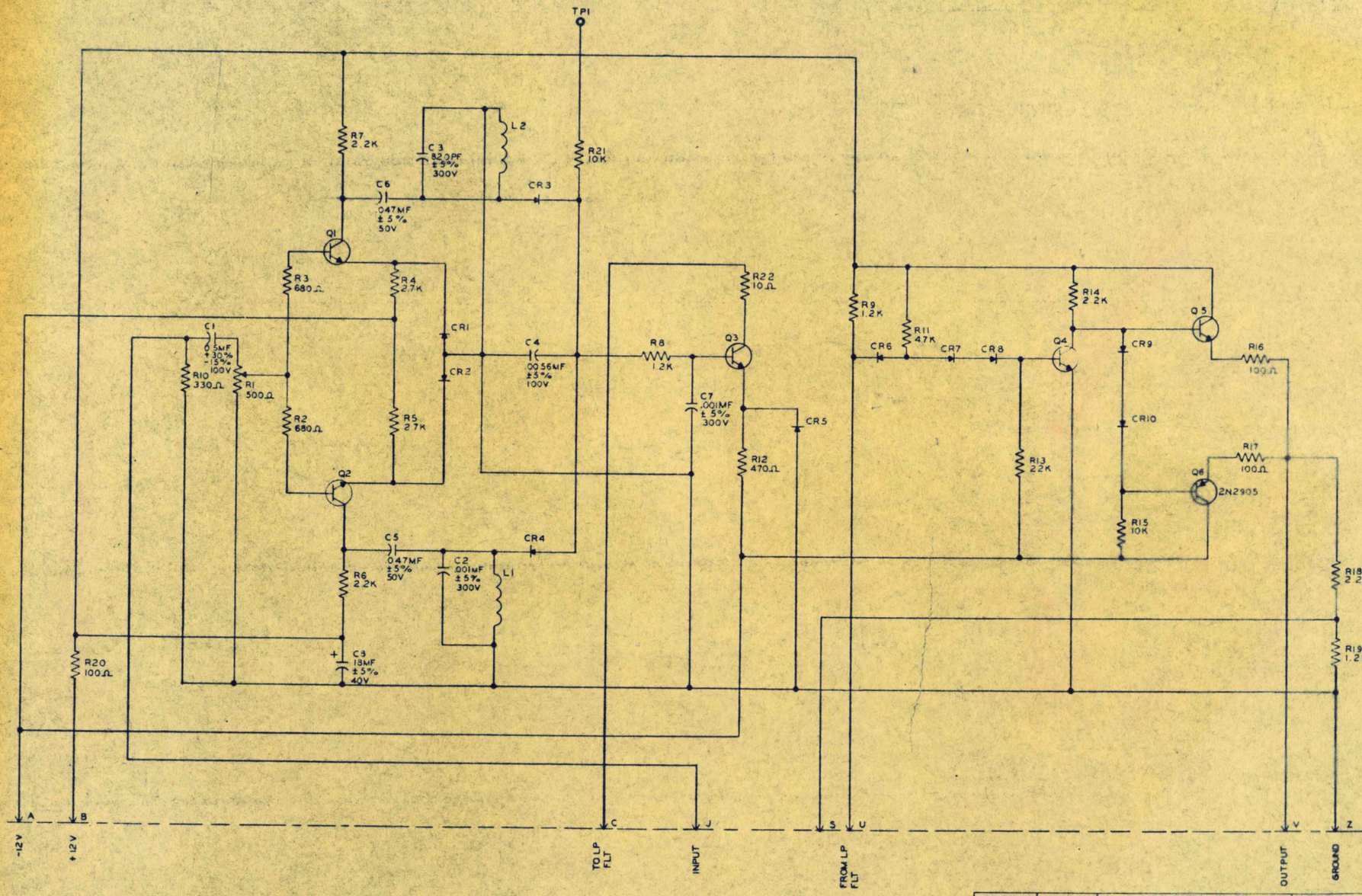
SECOND ORIGINAL

50M68767-1 SHOWN

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES .XX ± .03	ORIGINAL DATE OF DRAWING DEC 7, 1964	PRINTED WIRING ASSEMBLY LIMITER DISCRIMINATOR M-6260
NEXT ASSY SATURNE; USED ON APPLICATION	MATERIAL; HEAT TREATMENT; FINISH PROTECTIVE	APPROVED; DIRECTOR	GEORGE C. MARSHALL SPACE FLIGHT CENTER, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, HUNTSVILLE, ALABAMA
		WEIGHT CHECKED; DATE; CHKD	SIZE F; 50M68767
		SCALE 4/1; UNIT WEIGHT	SHEET 1 OF 1

USE OF GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO	M?	REVISIONS			
	ZONE	SYM	DESCRIPTION	DATE	APPROVAL
		A	INC E.O. TM-GSE-618	3-8-65	



NOTES

1. UNLESS OTHERWISE SPECIFIED ALL ALL COMPONENTS ARE AS FOLLOWS:
   RESISTORS ARE 1/4W, ± 5% EXCEPT AS NOTED
   TRANSISTORS ARE MOTOROLA 2N2501 EXCEPT AS NOTED
   DIODES ARE SIN916B
2. REFERENCE DRAWINGS:
   PRINTED WIRING ASSEMBLY 50M68767
   PRINTED WIRING BOARD 50M68766
   PRINTED WIRING MASTER 50M68765

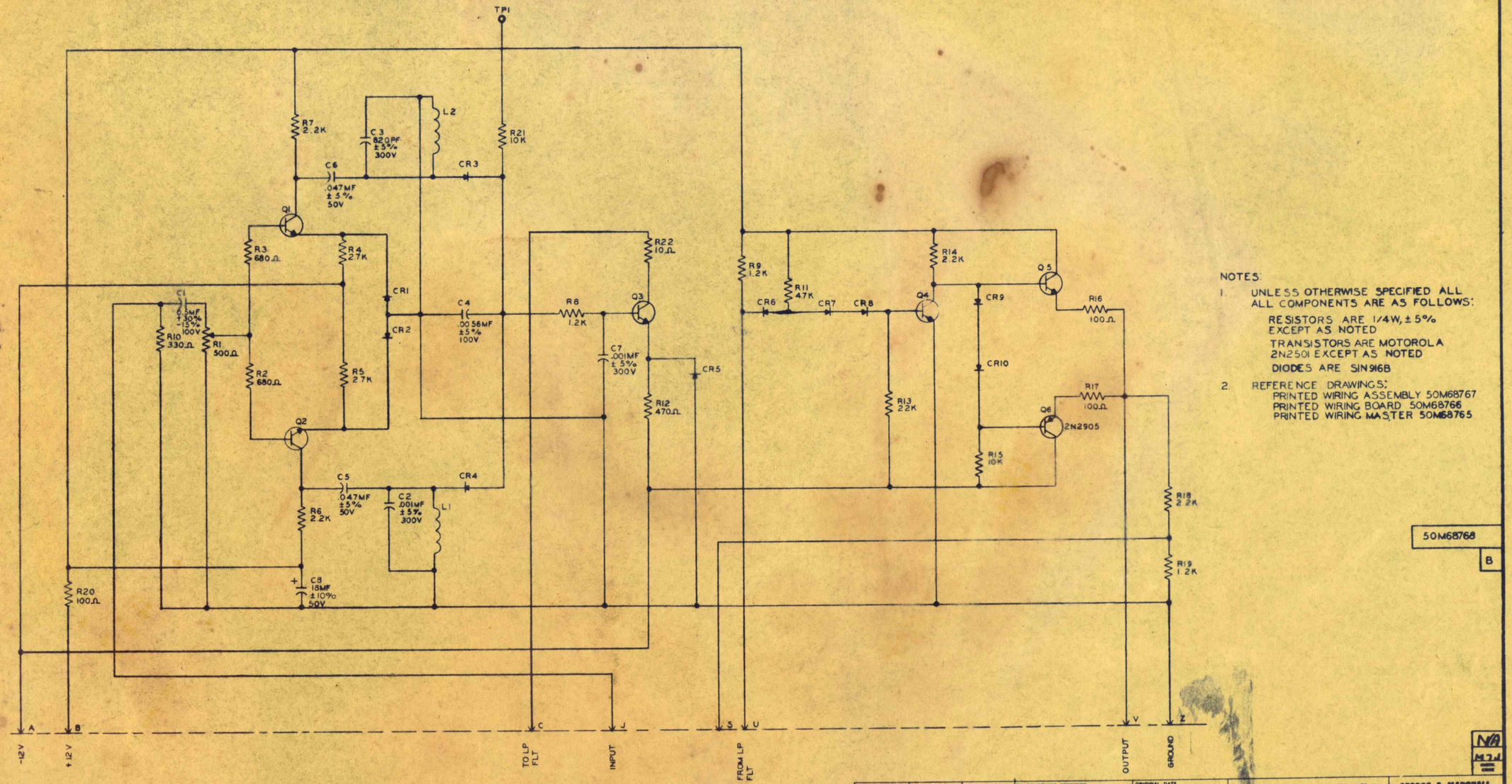
50M68768 A

SECOND ORIGINAL

		UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING DEC 21 1964	ELECTRICAL SCHEMATIC LIMITER DISCRIMINATOR M-6260	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS		DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	CHECKED, STRESS, ENGINEER, SUBMITTED		SIZE D — 50M68768
NEXT ASSY.	USED ON	MATERIAL, HEAT TREATMENT, FINAL PROTECTIVE FINISH	APPROVED, DIRECTOR	WEIGHT CHECKER, DATE, CODE; SCALE, UNIT WEIGHT	SHEET 1 OF 1

NASA — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	QTY	ZONE	SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
			A	INC E.O. TM-GSE-618	4-6-66	
			B	INC E.O 9P-225	6-13-66	



NOTES:

1. UNLESS OTHERWISE SPECIFIED ALL ALL COMPONENTS ARE AS FOLLOWS:
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2. REFERENCE DRAWINGS:
   PRINTED WIRING ASSEMBLY 50M68767
   PRINTED WIRING BOARD 50M68766
   PRINTED WIRING MASTER 50M68765

50M68768 B

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON FRACTIONS, DECIMALS, ANGLES	ORIGINAL DATE OF DRAWING DEC 21 1964	ELECTRICAL SCHEMATIC LIMITER DISCRIMINATOR M-6260
NEXT ASSY / USED ON / APPLICATION	MATERIAL; HEAT TREATMENT; FINAL PROTECTIVE FINISH	SUBMITTED; APPROVED; DIRECTOR	WEIGHT CHECKED; SCALE; DATE; CODE; UNIT WEIGHT; SHEET 1 OF 1

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DRAWING NO. 50M68768 D

Change Date
26 June 1967